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ORIGINAL ARTICLES.

THE TREATMENT OF GENERAL PERITONITIS.[1]

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IN their treatment of general septic peritonitis, surgeons are not by any means agreed as to many important points. There is at present as much difference of opinion on this subject as was the case ten years ago. This difference of opinion and practice prevails not only concerning the details of operation, but also concerning the general principles of treatment. In recent years this divergence of view has been in part caused by our better knowledge and appreciation of the ability of the peritoneum to absorb and destroy the poison generated by bacteria. We are now aware that a considerable amount of poison and exudate can be readily disposed of by this membrane. Hence has come a tendency on the part of some surgeons to be less confident of the invariable necessity for operation, or at least to be less energetic and painstaking in the toilette of the infected peritoneal cavity.

There should, however, be no one rule of treatment. It should vary according to the etiology, duration and virulence of the disease, and also according to the resisting power of the patient. The wisdom of the surgeon will be shown in the proper selection of the principle and methods of treatment. Certain hopeless cases will be encountered where euthanasia is the only treatment indicated. In other cases operation is demanded, and in yet others the surgeon may be at a loss to decide which plan will offer the best chance for recovery.

The etiology of the case influences the prognosis, as well as the means of treatment. The immediate shock which results from the escape of poisonous fluids into the peritoneal cavity through rupture or perforation of a viscus, does not now concern us, neither does the propriety of immediate operation for its relief. Peritonitis, however, rapidly follows. At first this may not be of a very virulent type, but it is continuously fed and aggravated by the poisonous outflow, until the leakage is stopped. On the other hand the poison which escapes from a leaking vermiform appendix is more virulent, but its amount is smaller and its wider distribution may be blocked by adhesions of neighboring organs. The rupture of a pyosalpinx is apt to cause a milder grade of peritonitis than that which follows the escape of intestinal contents. Leakage from the inflamed or gangrenous gall-bladder, if not blocked by adhesions, is apt to produce a severe grade of peritonitis. In the case of a perforation of a hollow viscus, where absence of adhesions permits of the outpouring of large amounts of toxic fluids, there is but one appropriate treatment. Immediate operation is demanded. As examples may be mentioned gastric, duodenal and typhoid perforations, or those due to a foreign body from the intestine or the gall-bladder. Similar treatment is indicated for peritonitis due to strangulation of intestines, whatever be the cause. In all these cases immediate and rapidly conducted operation for removal of the cause with appropriate treatment for the peritoneal inflammation, is indicated. The vast majority of cases of general septic peritonitis, however, are due to appendicitis, and it is especially to this form of the disease that the following remarks will apply.

The resistance of the patient has naturally a marked influence on the prognosis, as it should on the treatment. In this connection age is a factor of great importance. In a young boy or girl the most hopeless looking case will not infrequently recover, and this in spite of the particular method of treatment. The elderly individual, especially if his liver, kidneys and heart have been subjected to years of dissipation, will but rarely recover. My own methods of treatment are distinctly influenced by these considerations, and the larger my experience the more I am convinced of their reliability.

The prognosis will largely depend on the degree of septic intoxication present, whether this be due to the virulence or duration of the poison, or to the feeble resisting power of the patient. On this also should be mainly based our plan of treatment, and, as has already been stated, this should vary according to the conditions which we encounter. No one plan is suitable for all cases.

One of the most important and burning surgical problems of the day concerns the propriety of operation upon all (except moribund) cases of general septic peritonitis. Shall operation be the universal rule, or shall it be employed in selected cases only, or shall it be practically rejected? These are the three most important questions for our discussion. It may be fairly stated that the majority of surgeons favor an affirmative answer to the first of these questions, and, as a rule, recommend immediate operation. A fair minority would perhaps agree to the second proposal and select according to their judgment certain cases for immediate operation and others for non-operation or at least delayed operation. A small minority, including, however, some able and experienced surgeons, would rather agree to the third proposal and reject immediate operation in

[1] Read at the First Congress of the International Surgical Society, Brussels, September 26, 1905, to introduce the subject of Peritonitis.

practically all cases. It is mere waste of time to discuss the views of a few surgeons, who teach that these cases are practically hopeless whatever may be the treatment. For further elucidation it may be convenient to divide these cases into two categories.

1. Patients in desperate or moribund condition. The pulse is small and feeble, generally very rapid, 130-140; the facies have a most distressed and anxious appearance; vomiting is almost constant. The abdomen is enormously distended and hard as a blown-up football; respiration is rapid, distressing and shallow; the extremities are bluish; often there is a semi-gangrenous odor emanating from the patient's body. The mind, even in the most desperate of these cases, is often clear, and the eyes bright. The prognosis in this class of patients is practically hopeless; death will end their sufferings within twenty-four hours; operation is contraindicated. It will but hasten the fatal result, and is apt to bring discredit upon surgery.

2. The patients are critically ill, but not moribund. The heart's action is feeble and generally very rapid, but the circulation is not yet hopelessly impaired. Vomiting is frequent, and the abdomen is markedly distended and hard, but is not of the football variety. Respiration is less distressing, and the appearance of the patient is less critical. In this class of cases the majority of surgeons favor immediate operation. They claim that without operative interference such cases are almost invariably hopeless, while if operated upon, the percentage of recoveries will be from 30 per cent. to 60 per cent. or even 80 per cent. On the other hand, certain surgeons claim that the chances for recovery are better if the operation be postponed. These men maintain that their mortality since the practice of immediate operation has been abandoned, has been distinctly reduced, indeed, as much as 50 per cent.

A few years ago I belonged to the first of these classes, and no one was more urgent than myself in advising immediate operation in practically all cases. In recent years I have been gradually questioning the advisability of this plan of procedure, and I now, especially since the teachings of Ochsner, class myself with those surgeons who would carefully choose operation for certain cases and reject it for others. Within the past few years, I have often been agreeably surprised to see patients whom formerly I would have thought could only be saved by immediate operation, pass through the critical stage of the disease, when treated by absolute starvation, gastric lavage, etc. I have not, however, reached the position where I recommend non-operative treatment even in the majority of cases, but I firmly believe that we should carefully consider in every case, whether operation will give the patient the best chance for recovery. Of course, in cases of perforated stomach or intestine or strangulated bowel, immediate operation is but rarely contraindicated. When, however, the peritonitis is due to appendicitis, I am convinced that it is wiser not to follow any general rule of treatment, whether it be to operate or not to operate. The chances of recovery for elderly patients, especially if they have led dissipated lives, are, I believe, diminished if they be subjected to operation. The best treatment for these cases consists, I think, in absolute starvation, gastric lavage and small saline enemata, followed at a later date, if possible and necessary, by operation for a localized suppurative peritonitis. On the other hand, youthful patients, I believe, should, as a rule, be subjected to immediate operation. In the class that are neither young or elderly the surgeon must be guided in his treatment by the special features of each case. I must confess that, at the present time, I am often in doubt in this class of patients, which plan of treatment to recommend.

I feel sure that these remarks concerning the doubtful propriety of operation in certain cases will be adversely criticised by many of you. It will be said, how is it possible for such patients to recover without operation, when we know that the intestines throughout are deeply injected, distended and paralyzed, and when everywhere in the peritoneal cavity is found turbid serum or pus? I can only say that my experience in dozens of such cases has shown that without operation a fair proportion have fully passed through the critical stage of their peritonitis, to a condition where there remains but a localized abscess, in the midst of which lies a gangrenous appendix. At the end of a few days this is opened and the appendix removed by a comparatively simple operation. Sometimes indeed the case progresses to complete or, at least, temporary recovery, without even the formation of an abscess. Such is the remarkable power of the peritoneum for absorption and destruction of septic poison and inflammatory exudate. By some of you, I feel sure, it will be said that the diagnosis in these cases has been erroneous, and that the peritonitis has not been *general*. I cannot agree to this, for in an hospital experience of seventeen years I have operated on about 250 cases of general septic peritonitis, and certainly should be able correctly to diagnose this condition. I am willing to grant that in perhaps 10 or 15 per cent. of the cases my diagnosis may have been wrong, but certainly in the other 85 or 90 per cent. the experienced surgeon should not fail to rightly estimate the extent of the peritoneal sepsis and inflammation.

I do not wish to be understood as opposing operation, but simply wish to emphasize the fact that it is not always the best treatment. To illustrate my present treatment of general peritonitis, I may state that ten years ago I was in the habit of operating on perhaps 80 or 90 per cent. of all cases encountered. Now I operate on only about 50 per cent.

In these operations many different procedures have been employed. Some of these are discussed

more fully later in this article. Many, such as the use of antiseptic solutions for irrigation, etc., have been abandoned as injurious.

The most important features of operation for general peritonitis are in my opinion: (1) Rapidity; (2) gentleness; (3) removal of the cause; (4) postoperative elevation of the trunk and head, with corresponding depression of the pelvis.

OPERATION.

Anesthesia.—General anesthesia, as a rule, is preferable to any method of local anesthesia. There are exceptional cases where the latter may be indicated. Chloroform is frequently to be preferred to ether, though a mixture on an open mask is often the most advantageous.

Incision.—As a rule, when the cause is known, this should be made over the spot where lies the exciting lesion. As this is apt to be the appendix vermiformis, the incision will be made in the right inguinal region. In cases of doubt a median incision is best. Wherever situated, a length of 8 to 10 cm. is generally sufficient. If not, the incision can be extended during the progress of the operation. An incision of from 12 to 20 cm. does not seem to me to offer any advantages, and if recovery follows, is apt to result in discomfort to the patient.

As a rule an intermuscular incision is not advisable, though in lax abdomens either the McBurney or Kämmerer is sometimes sufficient. The incision along the outer edge of the right rectus muscle is generally the most convenient. When the peritoneal cavity is opened, fluid escapes. This may be under pressure, and squirt out with some force, but generally this means that the peritonitis is more or less localized. The character of the fluid may be turbid serum or thin pus. If the pus be thick, it is apt to mean a peritonitis which is not entirely general. The amount of fluid varies. There may be but little, or there may be a liter or more. The cause of the peritonitis is immediately sought and brought into view. At the same time it is determined whether or not the peritonitis be general. If general, irrigation through a tube is at once begun. Normal salt solution at a temperature of 110° F. is employed, through a hose of good size, and with considerable force. The rubber hose itself may be inserted, or there may be attached a long glass irrigating tube (in America, known as Chamberlain's tube) or a double current glass tube, for ingress and egress of the fluid. The irrigation is begun in the flanks and systematically carried to different parts of the abdominal cavity, terminating with a thorough washing out of the pelvis.

This in itself, consumes but little extra time, as it continues during the other steps of the operation, and terminates only with the insertion of the sutures. The hand of the operator, covered invariably by a rubber glove, helps, by gentle manipulation, the washing process. If the intestines have emerged from the abdominal cavity, they are carefully protected by hot towels, and flooded with hot saline solution. Generally, into the upper part of the small intestine there is injected through a large hypodermic needle 30 gm. of a saturated solution of magesium sulphate, the puncture being afterward closed by a Lembert suture. The exciting cause of the peritonitis has already been eliminated. If an appendix, it has been removed; if perforation of an ulcer, it has been sutured.

When the peritoneal contents have been replaced, nothing remains but the closure of the wound and drainage. This is effected by the employment of one or two drains of small diameter, the remainder of the wound being closed. One of these generally passes into the pelvis, and often another into the loin. This latter may emerge through a stab wound made posteriorly. My favorite drain is known in America as the "cigarette drain." It consists of a thin strip of sterile gauze, around which is loosely wrapped a layer or two of thin rubber tissue. In place of the cigarette drain, especially if the pus be thick, a fenestrated rubber tube is sometimes employed. I never employ for purposes of drainage unprotected gauze strips or masses of packing. A strip of gauze, carried through a glass tube into the pelvis, is, however, occasionally used. For the emergence of these drains comfortable spaces are left in the wound unsutured, or the sutures may be inserted for future use, but left untied.

Often, while the operation is in progress, an intravenous saline infusion is given by an assistant. The smallest possible amount of anesthetic is administered. It is the operator's endeavor to complete the operation as rapidly as possible, and as a rule the patient is not on the table longer than twenty minutes. For the reduction of the tympanites I have often given, hypodermically, physostigmine salicylate .002 mg. I am very skeptical, however, as to the efficacy of this drug. A small hypodermic injection of morphine is usually administered at the close of the operation.

The treatment of these patients *after* operation is of considerable importance. It is not, of course, necessary to dwell on the means of stimulation, such as enemata, hypodermoclysis, venous infusions, etc. The postoperative posture of the patient, however, is, in my opinion, of the greatest importance. The head of the bed is elevated 40 to 50 cm., so that the drainage current will be toward the pelvis. This, in America, is known as Fowler's position. It is maintained for about a week. The thighs are generally flexed over one or two pillows. This adds to the patient's comfort; indeed the posture, whereby the chest and head are elevated, is usually pleasing to the patient. Starvation is absolute until abdominal distention is diminished by normal passages of flatus, and until vomiting ceases. Generally at least twenty-four hours elapse before anything, except water in small quantities, is allowed by the mouth. Saline enemata, small in amount, 250 gm., are regularly administered, and some-

times nutritive enemata are advisable. Gastric lavage is frequently given before the patient leaves the operating table, and is often continued at intervals until vomiting ceases, and abdominal distention diminishes. It not only gives relief, but is most beneficial in its action, by removal of pressure from heart and lungs, and by encouragement of the intestines to resume their normal peristaltic action.

Drainage remains as established, for thirty-six or forty-eight hours, and then its removal is begun cautiously and gradually. The drains, being covered by the smooth and slippery tissue, can be extracted without pain and without disturbance of the surrounding intestinal coils.

Having thus briefly outlined my general plan of procedure, it will not be amiss to dwell more particularly on some of the details of the operation, and to discuss them in connection with other methods practised often with equal success by other surgeons.

Rapidity of Operation.—This seems to me one of the most important points. The duration of the operation should be as brief as possible. It should be completed in less than thirty minutes; indeed fifteen or twenty minutes should generally be sufficient. To accomplish this result, all details should be carefully arranged before anesthesia is begun. Assistants and nurses should be fully instructed as to their duties. Complete infusion apparatus should be ready for immediate use. If the surgeon feels that the operation will consume an hour or more, I honestly believe that its omission will offer the patient a better chance for recovery.

Incision.—As already stated, an incision directly over the exciting lesion, seems generally advisable. Some surgeons, however, feel that it is wiser to make the primary incision at some distant point, so that, in case the peritonitis be not general, the unaffected area may be walled of by gauze, before the septic area is exposed by the second incision. Perhaps in certain cases, where there is considerable doubt as to existing conditions, this may be advisable, but it seems to me unnecessary, as a general rule, to resort to a procedure which adds somewhat, even if little, to the severity of the operation.

Methods of Cleansing.—Perfect cleansing is, of course, impossible. The imperfect cleansing, however, which is accomplished in more ways than one, is often sufficient to tilt the scale toward recovery. Whatever method may be employed, the avoidance of mechanical or chemical irritation of the lining cells of the peritoneum is of the greatest importance. Injury or irritation of these cells deprives the patient of just so much power to absorb and nullify the virulence of the poison, and exposes new areas for septic absorption. For this reason I have for some time employed only normal saline solution. Chemical irritants, such as boric acid, Thiersch's, mercuric bichloride, peroxide of hydrogen solutions, I have abandoned as deleterious. The saline solution is also useful as a stimulant, for a considerable amount is absorbed into the blood-vessels during the progress of the operation. Mechanical irritation, such as must result from sponging or rubbing the peritoneal surfaces with gauze, seems to me also to be injurious.

Drainage.—Concerning this detail so much difference of opinion and practice exists, that, I fancy, many divergent views will be forcibly enunciated at this Congress. At the one extreme, entire absence of drainage will probably be advocated; at the other, multiple and balky drainage. As stated, my own practice limits drainage, as a rule, to one or two small drains, called in America "cigarette drains," which consist of a narrow strip of sterile gauze, around which is wrapped thin rubber tissue. The thickness of the drain is usually not much greater than the ordinary lead-pencil. The rubber tissue employed is very thin, and is wrapped loosely around the gauze, which should not project beyond it more than 1 cm.[1]

The advantages of such a drain over strips of uncovered gauze are very great. As intestinal coils cannot adhere to the smooth rubber surface, any tendency to obstruction is obviated; drainage is more effectual; its removal is painless and does not disturb or displace the surrounding intestines. As already stated, if the pus be thick, with the probability that this quality will continue for some days, a fenestrated rubber tube of the same size is preferable. Tamponades of gauze seem to me to be disadvantageous. They are apt to interfere with the proper intestinal peristalsis, if indeed they do not cause obstruction, and while protecting any special septic area, interfere with general drainage. An exception, however, is made, should there be failure for one reason or another, to remove the cause of the peritonitis. This is then shut off by gauze packing, so that it will not continue to poison the general peritoneal cavity. In operations for general peritonitis, however, this condition can but rarely exist. When, however, there is a suppurative peritonitis which has not yet become general, and where the patient is profoundly septic, the simple opening of the abscess with tamponade of the cavity, without attempt to remove the appendix, is unquestionably, at times, a life-saving procedure. *Multiple drainage openings,* with multiple drains, I am not inclined to favor, unless the peritonitis be of that variety where numerous distinct collections of thick pus are found at different points in the abdominal cavity. A tube into each of these pockets may then be of advantage. Otherwise, I believe, one or two drainage exits are as beneficial as half a dozen. I am opposed to *postoperative* irrigation. This, in past years, I have tried in various ways, but long since have entirely abandoned. The entire omission of peritoneal drainage has recently been strongly advocated by a few surgeons, and their experience, while not

1 Illustrations from Dr. Hawkes' article in Presbyterian Hospital Report, No. VI.

large, has certainly been sufficiently favorable to demand consideration. I believe, however, as a routine procedure, the absence of drainage is a mistake. Many a case will progress satisfactorily without drainage; but in a long series of cases, I believe, the surgeon who employs some slight egress for poisonous secretions will have better results than he who closes the peritoneal cavity. I would, however, prefer entire absence of drainage to that which is attempted by means of large masses of gauze. To this I have always been opposed.

Evisceration of Intestines.—This should generally be avoided. In former years I often deliberately encouraged the intestines to emerge from the abdominal cavity, in order that the cleansing process might be more thorough. I have never seen any great amount of shock result from this procedure, but I invariably used the utmost gentleness in my manipulation, and endeavored to protect the emerged coils by smooth towels wet with hot salt solution. At times, however, I found the replacement of the intestines attended with considerable difficulty, and as no distinct advantage seemed to result from the evisceration, I have in recent years tried to avoid any intestinal protrusion.

Removal of Lymph.—Often, especially around the original lesion, there will be seen masses of fibrin, and patches and flakes of the same material may be found at different points adherent to the intestines. Should these be removed? If very loose or hanging by a thin attachment, they should, I think, be removed. If, however, the patches be quite adherent to the intestines, it seems to me better practice to leave them undisturbed. They may be infectious, but it is wiser to take the chances of a small localized septic process, rather than by their removal to expose new areas for the absorption of the sepsis.

Enterotomy and Enterostomy.—If the small intestine is found to be enormously distended, and especially if during the irrigation it has partially escaped from the abdominal cavity, I am inclined to believe that an incision in its wall, and the "milking out" of some of its contents, is in some cases a beneficial measure. Some years ago I showed that a mere opening will not empty the intestine for a distance longer than perhaps 50 cm., and to effect a substantial evacuation, even of gas, a so-called milking process must be practised. This must, however, be carried out with the utmost gentleness by the gloved fingers. The opening, in my opinion, should be at once closed by suture. The usual protection of the peritoneal cavity is, of course, employed.

A temporary enterostomy is not, in my opinion, often of benefit; indeed, I think, it exerts a rather deleterious influence. It will not lessen the sepsis, and if the intestines mean to recover their peristaltic action, this will be accomplished without the aid of an arti-

CIGARETTE DRAINS.

A and B before introduction. A^1 and B^1 after introduction; upper ends unrolled into the dressing. X Badly constructed drain, gauze rolled too tight and at lower end fringy and projects too far.

ficial anus. Their recovery from a semi-paralyzed condition will be often hastened by gastric lavage. This will also notably relieve abdominal distention. The establishment of an intestinal fistula or anus adds slightly to the duration of the operation, and in my experience, after the expiration of a few days, by reason of septic complications, and interference with nutrition, it has been distinctly prejudicial to the patient. Its early closure if, of course, designed, but this cannot usually be attempted until a week or two has elapsed, as the patient before this time will not be in a condition to endure a secondary operation of such difficulty. My experience with this procedure has, I grant, not been great, and I also grant that in some cases it may be of some advantage, but as a general practice I am inclined to consider it with disfavor. The Greenough tube I have not employed, but I should judge that in certain cases it might be beneficial.

Injection of Magnesium Sulphate.—Injection of magnesium sulphate into the small intestine by means of a hypodermic needle, formerly seemed to me a measure of considerable value. Though I still employ it, I am less enthusiastic as to its use. Some surgeons, however, regard it with favor, and I am still inclined to believe that it is often beneficial. If the source of the peritonitis has not been removed, it should, of course, never be employed.

Postoperative Position.—As already stated, I firmly believe that the elevation of the upper part of the body, with the depression of its lower part, so that the current of the abdominal drainage is downward toward the pelvis, is of the greatest value. The head of the bed should be elevated about 50 cm. It is known that the pelvic peritoneum is more tolerant to poison than that of the upper abdomen, and the employment of this posture enables the patient to make use of this property, as well as to take advantage of the force of gravity. Correspondingly prejudicial, in my opinion, is the reverse position where the pelvis is elevated and the chest and head depressed.

Conclusions.—1. No one plan of treatment is applicable for all cases.

2. The majority of cases are best treated by operation, but there are also many cases where operation diminishes the chances for recovery.

3. Undoubted cases of general peritonitis recover without operation.

4. Rapidity, gentleness and removal of the cause are the most important features of the successful operation.

5. Irrigation with saline solution is generally recommended. All chemicals and mechanical irritants are to be avoided.

6. Drainage should be provided, but the drains should be smooth, non-adhesive and of small diameter. The cigarette drain is preferred.

7. Enterostomy is not advocated.

8. Gauze packing is injurious.

9. Fowler's position after operation is most advantageous.

PHASES IN THE DEVELOPMENT OF THERAPY.[1]

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(Continued from Page 824.)

To extol here what laboratory work has done for public hygiene is superfluous, but it would be a mistake to identify hygiene and its teachings with the bacteriologic era. They always existed. Air, light, and cleanliness were always known to be necessities; the hygiene of dwellings, disinfection, sewage, the disposal of the dead, were discussed even in the Middle Ages when the rapacity of the petty and big masters and the sensuousness of the high clergy were the supreme rulers of society. Even in antiquity the plague of Athens taught its lessons, and if the heartrending description by Josephus of the destruction of Jerusalem be only partially true it must have been a source of instruction at least to the victors. Epidemics have always been great teachers, most impressive among them in modern times the cholera invasion of 1831 and 1854, the typhus of Upper Silesia, which became immortal through the tale of horrors told by Virchow, and the typhoid epidemics of our own making during the Spanish War. Necessity was the mother of hygiene in England, whose large population on a narrow island, industrial development and misery, caused inquiries into the sources of morbidity and mortality, and the establishment of commissions since 1842, the Public Health Act of 1848, the creation of permanent and general and local Boards of Health, and the Local Government Board Act of 1871. We are slow in imitating the English example. If it were not for the Marine Hospital Service, whose duties and privileges are gradually enlarged, we should have no central sanitation of any kind. The attempts at securing for the most urgent needs of the people, its health and physical welfare, a representation in the central government at Washington have been treated with scant courtesy. There should be, however, for the purpose of prevention, which has obtained the most exact basis in bacteriology, a close connection between the State and central government and medicine. Social legislation is most urgently needed if the human society means to emerge from its present low civilization.

Military medicine and hygiene were practised to a certain extent by the Greeks and Romans; even the Persians had something of the kind. Cyrus is reported to have boasted in the presence of his father of having supplied the army with surgeons. Kambyses replied, "Do not speak to me of surgeons. They work like cobblers patching up injuries. It is much better to guard the men against falling sick." The Middle Ages were almost entirely without any such measures. France had its Ambroise Paré in the sixteenth century, England its Pringle

[1] Address on Medicine, delivered before the Medical School of Yale University, June 26, 1905.

and Brocklesby; it was the first to establish a school for military physicians, that at Netley, in 1854. No country has done more for the military hygiene than, at a certain time, our own. The Civil War acted like a political, moral and scientific thunderstorm. The young and active Surgeon-General William Hammond lent his hand and power to the Sanitary Commission, composed of volunteer medical and lay citizens. The camps were kept clean, the men were clad and supplied with medicines and physicians, the pavilion system of hospitals introduced, non-military doctors were appointed to report on them, and epidemics were traced and stamped out. The Geneva Convention of 1863 was in part the direct result of what had been learned in America, and nothing could have been warmer than the enthusiastic eulogies conferred upon our achievements by Rudolf Virchow. But then again in 1900, he, then nearly eighty years old, said to me—"Tell me about your horrors of Chickamauga and Montauk. Why do you kill the youth of your land before they smell powder? Whose fault is it?" You all know that it was the disregard of all the best known laws of hygiene and preventive therapeutics that destroyed hundreds who should be alive now.

A few minutes ago I spoke of the necessity of giving medicines in proper cases, times and doses. It is not long since the therapeutics of infancy and childhood attracted the attention of the profession very closely. In it hygiene and medication are accurately interwoven. A thousand books and essays have been written within a dozen years on the prevention and cure of infant diseases. The number of mothers, however, that nurse their own babies has not increased, and the teaching of artificial feeding made but little progress. The main theoretical advance is the warning against proprietary foods, which, to judge from the array of expensive advertisements, do a great deal of good—to the manufacturers. That warning seems not to be heeded by the public, for the advertisers are not yet sick of their bargain. Another step in the right direction is the attempt at securing a germ-free and pure cows' milk; it has been successful to a limited extent. There are those, however, who, in spite of better teaching, will feed unmixed cows' milk and refuse to learn that cows' casein is not woman's casein, and cow's milk fat is not human milk fat, or that pasteurizing or boiling will remove some of the dangers caused by microbes to which city milk is exposed. Or when they *do* boil it, they will kill the milk by overboiling and complacently tell you they boil it—and then they call it "sterilizing"—thirty or sixty minutes, and they ruin the baby's health and give it scurvy. They have been taught, and so have we these thirty-five years, by physiological experiments that everybody may imitate, that a certain amount of starch combined with vegetable albumin in the cereals is digested by the very new-born, and improves the assimilation of the milk of the cow, which never can be made human, no matter whether you call it "modified" or "certified."

There are conditions in which even in cereal suspensions cow's milk is not tolerated at all. In the hot summer of 1854 the babies in New York were born to die of gastro-enteritis. Bad cow's milk, the heat of the tenement houses, and my ignorance worked hand in hand. I met two older colleagues at a street corner and threw up my hands in despair. "Stop milk," said one. "Starve them," said the other. Add to this, my young friends, as much germ-free milk as will be tolerated, generally very little indeed, and the white of eggs, and air if it can be had by day and night, and bathing, and you have the main roads leading to the salvation of your babies. There is wholesale preventive therapeutics for you.

The therapeutics of old age—a relative term, as many a man is physiologically older at fifty years than another at eighty—has improved with a better knowledge of arteriosclerosis. Is it possible to treat it as a uniform entity? It results from the unavoidable arterial changes beginning, according to Thoma, in the thirty-fifth year. It is increased by either sedentary or overactive life, by the extremes either of animal or of vegetable diet, the former resulting in ptomains, the latter in calcareous deposits; by abuse of tobacco or alcohol; by syphilis or other infectious diseases. Who is there to pretend that there must be a uniform treatment? It is true there are certain rules to be obeyed in every case. Let the food be mixed, small in quantity, poor in calcium, oxalic acid, and chlorine. Give milk and alkalies, as you do in diabetes and in uric acid diathesis, in food and as medicines, perhaps in the form of lactates. Give antisyphilitic treatment in proper cases, mainly of those who are of a comparatively early age. The ergotin recommended by a modern author (Rosenbach) is contra-indicated still more than strychnine, which is rarely tolerated by those whose heart-muscle is subject to atheromatous or interstitial changes. Employ cold water in friction only, never as a bath. That should be warm, not hot. Together with warm bathing, iodides should be given for the dilating effect, as Huchard first pointed out, on the smallest arteries. The same result is accomplished by nitrites, by aconite, and by opiates; arsenic may be tried for its action as a nutrient and a nervinum, and occasional doses of calomel when the kidneys are normal. Otherwise beware of calomel, though it was one of the greatest remedies extolled by Benjamin Rush. Together with venesection he speaks of calomel as the "Samson of medicines," forgetting that Samson slew three thousand. Exercise should be modified according to the case, also passive movements and gentle massage; and the use of carbonic acid in the warm bath may be expected to act as a gentle stimulant to the countless blood vessels.

Medicines and doses have to vary. Yet to believe that a mathematical proportion, determined by age or by weight, can be relied upon is fine reading in books, but it does not correspond with what Nature has ordained or permits. Perhaps some instances which I am going to give you, my young friends, do not correspond with what you believe you know. But listen to a few fragments:

A baby, say of one year, must have, according to the books, $^1/_{20}$—some say $^1/_{18}$—of the dose of an adult. Now take that baby with enteritis: a severe diarrhea exhausts the body; ten per cent. of its weight may be lost in a day and hydrencephaloid may be the result. That baby should have, and bears, with other medicines directed against the local affection, $^1/_{30}$ or $^1/_{40}$ grain of opium every two hours. It bears it well. I have given it more than fifty years, and I have attended tens of thousands of babies. They tell us opium will sometimes kill in small doses. So it may, but not if you keep your eyes open and watch the effect of the first or the fifth dose. It may kill adults as well, unless watched. There is such a thing as idiosyncrasy, no matter how it is explained. According to the schedules, the adult would take ½ or ⅓ of a grain of opium every two hours in the same condition, and that would be a large dose for him. Accordingly, opium should be watched more carefully when given to the adult than to the baby.

Give an adult one grain of extract of belladonna daily, and soon it will prove an overdose. Give a baby of one year with whooping cough, or a larger child with incontinence, ¼, ⅓, sometimes a ½ grain daily—which would correspond with the proportionate schedule dose for an adult, of 5 or 8 grains—and no such symptom will appear.

Five grains of potassium iodide I have seen to give a gigantic adult salivation and edema of the face, neck and glottis; a meningitic baby of two years will take without the symptom of overdosing two drams daily, for weeks.

A syphilitic baby, a month old, takes ¼ grain of calomel three times a day for months; the only thing that happens to it is that it gets well. Give a proportionate schedule dose to an adult for a week, and he has a salivation, no teeth left in his mouth, and you have a well-deserved suit for malpractice.

Give $^1/_{60}$ grain of corrosive sublimate in a half-tablespoonful of distilled water every hour for three or five days to a baby of six months, and its laryngeal diphtheria will, or, at least, may get well, and it shows no salivation, no vomiting, and no diarrhea. Give the schedule dose—20 times as much—to an adult, and he will have salivation and be a horror to his friends, and may perish with mercurial poisoning.

Heart stimulants are borne and required by the young in larger relative doses than by the adult. Let me speak of digitalis only. I expect you give your medicines in order to obtain an effect. To give it in such small doses as to produce its action after a week, is superfluous. I do not advise giving placebos except when you have to doctor the patient's prejudices or neurotic aberrations. That may become necessary among adults. "Whoever does not know how to simulate when it is required does not know how to cure." Now a baby of a year will take five drops of a good tincture of digitalis every two hours, but even so, you may see no effect for a whole day. Give the drop or the half drop you read of in the books, and you are perfectly safe as far as a court of law is concerned, for nobody can prove you injured your patient directly—but you overdo what they like to call expectant treatment, which is no treatment and no care, and no cure. Give the schedule dose, that is, 15 or 20 times as much—that would be a dram—to an adult. He will not bear it.

I beg of you, study your cases with more of an eye on the patient than on the book; and now and then believe an old experience rather than a young, and sometimes fresh, treatise.

What I claimed in Rome in 1894 still stands. We all agree that overdosing is wrong and harmful, but also that it is being practised. To give mercury to salivation; salines until the rest of soluble albumin and salts is gone; digitalis until the pneumogastric nerve is overstimulated into vomiting and collapse; belladonna until the throat is as hard as a gridiron, and the pupils like wagon wheels; quinine until the patients get deaf; iron until gastric catarrh and constipation destroy what was left of health; to burn and saw noses for everything in the line of ailment that may befall the flesh; to put glasses on the nose of whosoever is epileptic, or lame, or demented; to prescribe acetanilid because an advertising manufacturer says it is your sacred duty to him and his bank account; to cut the cervix uteri for endometritis and sterility; to sew up the same with the same end in view; to cauterize and otherwise handle the problematic ulcerations of a uterus for endometritis and sterility; to introduce daily or twice a week tampons of glycerole for the same purpose and with the result of causing or increasing parametritis—these and many more things, most of them awfully modern, are abominations created sometimes by defective or vicious theories, and now and then by the thoughtless generalizations of occasional indications.

In connection with the foregoing I beg to add: Neither a deluge nor an absence of drugs makes the physician.

The first indication in therapeutics is a correct diagnosis. The most efficient treatment is local, and the cause, seat, and essence of a morbid process should be known, or at least sought for. The most promising therapy of the future—serotherapy—owes its origin to nothing but an accurate bacteriological diagnosis.

Most diseases have a tendency to get well,

either completely or partially, contrary to what you may read in S. H. Dickson's "Syllabus" of 1835. He says: "The tendency of all forms of diseases is to death." The average of death rates, however, is 1:35 diseases.

But a partial recovery is no recovery. Mere escape from immediate death is no unmitigated blessing; invalidism of a person that had an opportunity to get entirely well may be the sin of omission on the part of the doctor. He should mitigate symptoms that by themselves add to the dangers of the morbid process; for instance, high temperatures that cannot be expected to belong to the average course of a toxic process should be lowered, for high temperatures may become a danger independently of the original disease. Or a disease which runs its typical course with a possible, or even probable, tendency to get well, should be cut short; a developing whooping-cough may thus be shortened by two or three months and the patient spared the dangers of a bronchopneumonia which may accompany the cough at any time. If nature is sure to terminate a whooping-cough in four months when not interfered with, she is cold-blooded and impartial enough to terminate the child before the four months, or even two, are completed. Or, when you know that every day of your pneumonias will weaken the heart until possibly no strength is left to overcome the crisis, you should not wait with your heart stimulants. Your name is not Micawber.

What not to do is as important to know as what to do. The days of craniotomy or craniectomy in microcephalus have passed away except for those who malpractice medicine; in idiocy they are still, or may be still, indicated when its cause can be ascribed to trauma, abscess or tumor; so they are in all tumors of the brain when they are accessible to diagnosis or the knife; or in those of the cranium or periosteum — mostly sarcomata, fibrosarcomata, or osteomata—which encroach upon the brain. In all such cases, when the indications were correct, operations on the brain belong to the pia desideria of olden times which since became realities. That the hydrocephalus of the lateral ventricles or a tuberculous meningitis should be attacked by the physician's knife, nobody was bold enough to hope a dozen years ago. They are still among the possibilities and venturesome achievements. I wish we could say as much of the most distressing and most discouraging cerebrospinal meningitis, which, as much as anything I have experienced in a long life, proves to what extent man may be humiliated by the knowledge of his impotence.

Lumbar puncture, as advised by Quincke in 1891, and practised innumerable thousands of times, has only in part added to our means of salvation or relief—indeed, less than it has to that of diagnosis. The cerebrospinal fluid, if no longer normal like that found in serous meningitis, may contain more albumin and leucocytes in cases of other forms of inflammation, or blood, pus, staphylo-, strepto-, pneumo-, and meningo-cocci, and tubercle bacilli. By reducing the quantity of cerebrospinal fluid, when frequently repeated—only 15 to 30 or 35 c.c. should be withdrawn at one time—lumbar puncture may take the place of the direct puncture of hydrocephalus; it has reduced the headaches of congestion, of chlorosis, of lead poisoning, relieved spasms, unconsciousness, and coma, and resulted in a few undoubted cures. It allows the injection of cocaine into the spinal canal, first advised by Corning, for the purpose of causing anesthesia during operations. It is a valuable asset in the modern era of therapy, though to what extent it will prove so in the epidural injections of tetanus serum (into the cranial cavity or) into the spinal canal, as is claimed by F. Cathelin in tabic crises and in lead colic; or of saline solutions into the latter in incontinence of urine, spermatorrhea, and impotence,—remains a problem for the future to solve. But more and more it will be our destiny and duty to look for a treatment that is as local as possible. A trifling subcutaneous injection into the chest wall will immediately relieve a distressing pain of pleurisy; a soluble tablet of morphine, or a few drops of Magendie's solution applied to the irritated throat will relieve an exhausting pharyngeal cough more effectively than a much larger dose of the same drug when taken internally.

Among the local treatments, we may count many modern measures; for instance, the strapping of the chest for intercostal or for pleural pain, the forcible protrusion of the lower jaw in attacks of whooping-cough, Kilmer's close-fitting jackets to moderate them; bandages and apparatuses, and the use of adhesive strips according to Rose and Rosenwasser, for dislocations of the bowels, uterus, kidneys and heart.

The benefit derived need not depend upon the correctness of all the theories applied to the malformations; for instance, dulness over the ensiform process does not always mean an anomaly of the heart, mainly in a short thorax; a low hanging heart does not always mean ptosis; an underfed neurasthenic or a chlorotic woman with great motility of the feeble connective tissue will not be cured by mere plastering.

If your patience be not exhausted I request you to follow me in the briefest possible retrospect of a few of the important therapeutical achievements of the last half century.

One of the greatest is the invention by Pravaz, 1853, of the syringe for subcutaneous injections. For local therapy in general and the local anesthesia as taught by Schleich it has proved invaluable.

Tracheotomy as practised by Trousseau, in 1851, in America by Waldemar von Roth, in 1858, has saved thousands of croup children, and our Joseph O'Dwyer's intubation has proved still more blissful. The operation for abscesses of the pleura and the lungs, since Lurde in-

vented the trocar in 1765, was perfected by Trousseau, by Bowditch (1852), Dieulafoy, and (1879) by Estländer. No one is here who has not performed or seen these operations. Let the progress made by the average physician be measured by the fact that the greatest French operator, Dupuytren, when his empyema was diagnosed, refused to be operated upon. He preferred, so he said, to fall into the hands of God rather than of man. So he did, only fifty-three years old, in 1835, only seventy years ago.

The extensive kidney surgery was initiated as late as 1869 by Gustav Simon, of Heidelberg.

Modern Gynecology dates from Marion Sims. Altogether the United States have contributed largely to the advance of Therapeutics. Since McDowell performed the first successful ovariotomy in 1809, Nathan Smith, John and Washington Lemuel Atlee, Alexander Dunlap, Edward Randolph Peaslee, Charles A. Budd, and a host of modern operators have carried the renown of American ingenuity and daring all over the world. When in 1850 I assisted—in a minor capacity—my teacher Wutzer, in Bonn, in his attempt at closing a vesicovaginal fistula (he was the only one besides Jobert de Lamballe that in Europe dared to do so) I heard the name of Marion Sims, who a year previously had scored the first complete success. I still have in my possession the clumsy flat speculum used by Wutzer. Sims' speculum, which was invented in 1846, we did not know. In regard to its value Robert Olshausen proclaimed in 1896 that without it the operations for prolapse and fistula could not be performed, and that the extirpation of the uterus and its adnexa, and the vaginal operation for myoma could not have been thought out. In 1854 Nathan Bozeman operated successfully on vesicovaginal fistula complicated with laceration of the cervix. The silver suture of Marion Sims was a great triumph when proposed in 1852. So was Battey's castration operation of 1872, simultaneous with that of A. Hegar in Germany and Lawson Tait in England—both very useful, but also very dangerous to the morals of doctors and women, and therefore both praised and censured. Long before (1830), Hugh Lenox Hodge invented his pessary, whose picturesque history is given by A. R. T. Penrose in his eulogy of the inventor (1873). He was the same, though, who marred his renown by the bitter opposition to Oliver Wendell Holmes, who, like after him, the unhappy and immortal Semmelweiss, taught the contagiousness of puerperal fever and the possibility of its prevention. That has been proven by the mortality of women in confinement falling from 16, 4, 2 to 1, ½, ¼ per cent., and less. Let me add the illustrious name of Alonzo Clark, who, in 1841, advised the opium treatment in peritonitis.

Is there nothing else? The greatest gift America has given the world is not the realization of a Republican government—ancient culture exhibited it before and allowed it to perish by political shortsightedness, lust of conquest and expansion and undemocratic jealousy—it is anesthesia. For the other therapeutical boon in this new era of therapy we have to look to Europe—it is antisepsis and asepsis. Operations on the skull, ear, and brain, the spinal cord, including lumbar puncture, the bladder and prostate, and the abdominal organs, have become so numerous that those who enter the profession at present cannot comprehend the amount of labor and acumen required for their perfection. I have only a word of warning in regard to them. Do not believe that every case of peritoneal tuberculosis operated upon owes its recovery to the operation, and do not find a justification for an operation in its immunity from danger. It is true that the temptation, sometimes not justified by its results, to perform a laparotomy for the purpose of arriving at a diagnosis is very great indeed (for corrosive sublimate and iodoform, and soap and water protect you and your patient in most cases—by no means in all)—and the public, mainly the female half, have developed an incredible greed of operations within a few years. But the mere inspection of the abdominal cavity should not take the place of brains. There are a great many ways or arriving at a diagnosis; to utilize only one, and that one not always without risk, is unworthy, unscientific, and immoral.

Ophthalmology has become a new science and art since the invention by Helmholtz of the scope, and by the epoch-making work of Albrecht von Graefe; the number of the blind would be smaller if Credé's treatment of the eyes of the newly-born were appreciated more thoroughly by the practitioner.

The ear, the nose, and the throat have become accessible to direct treatment. A mastoid operation when complicated is a great personal triumph, and frequently life-saving. One in 20 bone operations on the nose will prove beneficial; the removal of large adenoids improves respiration, hearing, the intellect, and facial beauty; what I mostly miss is after-treatment; mild but systematic irrigation should follow the operation for months in succession. The resection, not exsection, of the hypertrophied tonsils may have similar effects, but by far not to the extent that is claimed, for the theory that the tonsils are the main inlet of infectious diseases, such as diphtheria, scarlatina, and rheumatism, will have to be modified to a certain extent. The tonsils are surrounded by a firm membrane. Dozens of years ago I could prove that diphtheria when limited to the tonsils was least dangerous. The thousands of other lymph bodies disseminated in the fauces and posterior nares are more guilty than the two dozen which form the tonsils. It is they that should be considered in the preventive treatment of all the infectious diseases of childhood. That is why the claim of a modern writer that he can prevent tubercu-

losis by the exsection of the tonsils, which very few men beside himself, according to his categoric opinion, are able to perform, should be taken with more than the customary grain of salt.

Kussmaul's irrigation of the stomach for volvulus and stomach diseases has opened the way for many additions to treatment and diagnosis, to dosing and to overdosing. The esophagus is, however, not labeled "this way in." Stomach sounds have a way of piercing a carcinomatous wall, of rubbing against an ulcerated stomach, and being unfriendly in general. The presence of hyperacidity, which is not the entity of some but a symptom of many different conditions, permits its employment once to ascertain the chemical nature of the fluid; to repeat an indefinite number of office performances may be entertaining to the patient, which is doubtful, but it is no longer therapeutic morals or wisdom. Indeed, the frequent punishing of the gastro-enteritic baby with the stomach tube, which was a pleasurable occupation a few years ago, appears to lose its allurement, even to the pediatrist.

Billroth's resection of the pylorus, 1881, has started a brilliant series of operative procedures, among which gastro-enterostomy and the removal of parts of intestines for the purpose of circumventing and starving malignant tumors, have proved successful. Another starving process of tumors by cutting off their arterial supply has been suggested by Dawbarn.

Robert Weir's most ingenious utilization of the appendix, fastened in the abdominal wall, for the purpose of flushing the colon has greatly facilitated the treatment and actual cure of otherwise inaccessible intestinal ulcerations.

Our knowledge of the congenital or infant stenosis of the pylorus, though it is limited to a few years' experience only, has undergone its changes. It is no longer an exclusive property either of the operator or the undertaker. Gastro-enterostomy will be performed in but few cases. For the majority of cases are spastic, and depend on faulty mother's or cow's milk, overfeeding, hyperacidity, constipation, mainly that form which I have described as "congenital constipation," or on nerve irritability, which need not in later life lead to general neurasthenia, but resembles the isolated gastric neurosis of the adult male or female; it should be treated by the regulation of diet, change of milk, by opium, belladonna, lime water, magnesia and bismuth, and large enemas.

In the treatment of blood diseases the simple infusion of sodium chloride solutions, with or without the addition of sodium carbonate, has taken the place of the transfusion of defibrinated or pure human blood, not to speak of the attempt made thirty years ago in New York at substituting goat's milk. As hemostyptics, antipyrin in strong solution, adrenalin, and gelatine have replaced or supplemented ergot; as physiological blood feeders, the inhalation of oxygen has proved successful, both by clinical observation and direct experiment; and the circulation of the blood is remedied by a change in the position of the body, by hydrotherapy, by the action of digitalis on the vagus, by that of nitrites, aconite and iodides on the vasomotors, and in congestive diseases of the uterus and the spinal cord by that of ergot.

Bier's treatment of tuberculous joints by obstructive hyperemia appears to act both by the retardation of the circulation and the ultilization of the antitoxic effect of blood serum.

Venesection is beginning to meet again, in appropriate cases, with deserved favor. The fanaticism of Bouillaud will not return, and no Cavour will be killed again by medical bloodletting. But the last few decades have developed at least a few indications. In venous obstruction depending on disease or disturbed function of the heart, in pulmonary edema, in the intense cyanosis and dilatation of the right ventricle during the third or fourth day of an unusually severe pneumonia, in the poisoning of blood with urea or carbon oxide, venesection should find and has found a foremost place among our remedies.

Atrophy is surely benefited by rectal and by forcible feeding, the latter either through the nose or the stomach tube.

Neurology has enjoyed half a century filled with progress. Narcotic alkaloids have taken the place of the drugs. Chloral hydrate began its therapeutic career in 1869, and a large number of good and bad synthetic remedies made their appearance within half a generation. The worst of them all is acetanilid, which must not be called publicly by its patented or by its disguised name for fear of a lawsuit. It is a strong aniline poison, has caused many deaths, and innumerable cases of cyanosis and heart failure by decomposing hemoglobin, into methemoglobin. That is the same effect known in overdoses of potassic chlorate. That fatal change was discovered by Marchand in 1879, and explained the cases of poisoning by that so-called domestic remedy, which I had been reporting the previous twenty years.

Psychic diseases have been amenable to more effective therapeutics since their etiology was better understood. Ten per cent. are due to alcoholism, ten to syphilis, many to infectious diseases, part of which are preventable but not prevented. Of 460 cases of mental disorders resulting from infectious diseases there were 113 that followed influenza, 96 rheumatism, 87 typhoid fever, 43 pneumonia, 41 smallpox, 19 cholera, 16 scarlatina, 11 erysipelas. Among the 113 influenza insanities, 70 per cent. were influenced by morbid heredity, previous diseases of long duration, and mental overstrain. I dare say that at least one-half of these infectious diseases could have been prevented and all their results obviated.

Piper studied 215 cases of congenital idiocy.

The following facts were found in the unfortunate histories. There was mental disease of parents or relatives in 20 per cent., tuberculosis of parents in 15, of grandparents in 18 per cent.; in 15 per cent. the father was a drunkard, in 7 syphilitic. Among 75 cases of acquired idiocy, 20 per cent. were attributed to scarlatina complicated with diphtheria, 20 to a fall, 13 to rachitis, 12 to measles,, 6 to protracted labor, 1 each to moist dwelling, to forceps applications, to renal dropsy, to typhoid, to trauma of head, and to insolation. Almost every one in this number could have been prevented.

Great modern additions to our therapeutic measures are the Roentgen rays, probably also radium. I mention them without claiming prophetic gifts. They may be highly valuable, though whoever looks for a panacea is always mistaken. Exaggerations of the antiseptic effects, for instance, of colloid silver in internal and external sepsis cannot annihilate its merit. I believe I have seen good results from the ointment (15:100) and from rectal injections of 1 part of collargol in 100 to 500 sterile water, in puerperal fevers and in septic scarlatina and diphtheria. In cerebrospinal meningitis it failed to act. Of methylene blue I may say the same. These fifteen years, since the first recommendations by Mosetig-Moorhof, I have had it under constant observations in cases of inoperable intra-abdominal cancer. I use it internally only. Subcutaneously, it is cruelly painful. I cannot prove a total cure, but I notice reduction of the tumor, improvement in health, restoration of the ability to work, and retardation of the morbid process, sometimes for many years.

I shall make no remarks on the modern improvements of methods in the treatment of contagious or infectious fevers, except one, namely, tuberculosis; and I shall not repeat what is in the minds of all of us—domestic hygiene, diet, and sanatoria. There is a tendency yet to believe in sanatoria for the incipient cases only. The rich who go there or travel for their health from one salubrious place to another have a good chance to get well. The poor man, who is sent for a few months will improve, learn some rules of diet and hygiene, be able to work for some time, fall sick again, with an alteration of forced idleness and illness until the end—the usual end. He may have learned, however, to take some care of his sputum and to guard his family against contagion, as far as circumstances permit. The advanced consumptive, however, is the real danger to the family and the community. In any New York tenement house where there is one case of consumption there are more. A dying consumptive is a constant danger. It is he that should be removed to a healthy, comfortable place, which need be no elysium but a good enough place to die in without endangering the community. That is the only way in which epidemics of chronic diseases may become extinct. The hundreds of thousands of leprous of Middle Europe have disappeared; so have the thousands of sufferers from modern Norway. The same should be done with advanced chronic tuberculosis. A few hundred millions of our country's wealth would suffice to exterminate tuberculosis within a generation. Meanwhile, therapeutics need not be idle. The emphatic demand for tuberculosis sanatoria has so impressed the mind both of the public and the profession that no voice is heard any longer but that which extols sanatoria as the *only* possible salvation, and decries drug treatment. That is a grave mistake. We cannot say that any drug heals any disease by itself; it aids in a cure, it relieves symptoms, it regulates the circulation, it increases the power of resistance. That is what is meant by healing or by curing. That is what you may do in pulmonary tuberculosis, as in every other disease. Strength is saved and life prolonged by moderating cough and providing rest; the circulation you may regulate by stimulating and strengthening the heart and aiding it to overcome the pulmonary obstruction, by drugs and by employing hydrotherapy to regulate the circulation of the vast surface of the body; the power of resistance you may improve by choosing proper food; by helping the stomach and intestines to digest it, and by preventing auto-infection by antiseptics whose action is generally underestimated. Auto-infection is not so inaccessible to treatment as the bacteria toxins in the cells of the tissues. The former is produced on the surface of the mucous membrane, the latter is introduced from without; located in the cells, it cannot be reached by our antiseptic drugs, for bacteria to be destroyed require six times larger doses than the organic cell permits; the latter would be destroyed before the former is reached. Auto-infection, however, being the product of faulty digestion, can be reached in the intestinal tract.

The reputation creosote has gained in the treatment of tuberculous patients is in part surely the result of its action on the alimentary canal. Whether it has any other we do not know. Whichever it possesses is better exhibited by the preparations, fluid or solid, of guaiacol which forms the important part of creosote. These fifteen or more years since its use was recommended by Schüller I have employed it daily with good results. That I add arsenic, which is better tolerated in the form of arsenous acid than in the usual solution, and heart stimulants, and symptomatics, goes without saying. What I wish to impress upon you is not to neglect what is near at hand. While we are working for the admission of our patient to one of the few accessible sanatoria, he may die.

Perhaps it is human fate never to accomplish all that was intended, but a professional man who feels his duties and responsibilities to his fellow-men should have as little of the shortcomings resulting from ignorance or indolence

as possible. Indolence cannot be cured, and the man who is possessed by it should go to where no heart is required, into trade or menial occupations. Ignorance may be relieved through love of knowledge, or ambition, or love of mankind. Whoever has the latter may be made a good physician. At the same time he will be a good citizen. His interests go beyond the merit of the individual. Society is sick like its single members. Whoever is a student of causes will aid in correcting faulty results. The widespread diseases of the people beyond bodily ills are ignorance, poverty and crime. Nobody knows that better than the physician whose hand is on the pulse of man. He knows that much of the suffering of the present generation is caused by hereditary influences. As long as the epileptic, the criminal, the imbecile, the dying consumptive, the syphilitic, the gonorrheic, are permitted to propagate their kind or spread disease the human race must kiss the dust. The object of medical science as represented in the profession must be to influence the opinion of the public and its legislatures in behalf of preventive physical, mental and moral therapy. All that may seem far away and like a Utopian mirage. But we shall not be the last to inhabit the globe. Compare it with what it was only five hundred years ago, two hundred years ago, and learn to believe in progress.

The problems of every good man who loves his neighbor, all his neighbors, are more apt to be brought nearer their solution by the knowledge and tact of the physician than by any other man. He knows how crime, that worst disease of all, is engendered and propagated; knows many of the causes, all of the results of poverty, and takes a natural interest in the schools where the future citizens are educated. The time has not yet come to place the physician—the medical profession—where it belongs. In part that is our fault; it is not *only* hard work and fatigue, it is often indifference or indolence, that keeps us away from the field in which the battles of the people for gradual mental and physical improvement are fought. While hitherto when we spoke of modern therapeutics we have meant the bodily sick, man or community, future theraputics must be directed against all the faults and ills of all mankind.

Study of the Gastric Contents in Urticaria.—LEONARD K. HIRSHBERG (*Am. Med.*, September 2, 1905) in a study of the gastric contents in eight cases of urticaria, seems to have proved the frequent coincidence of hyperacidity with this condition. Five of his eight cases of urticaria, one of which was the gigantic form following tetanus antitoxin injected as a prophylactic, show a high total acidity with a high amount of free hydrochloric acid. Dr. Hirshberg has been unable to find any previous analyses of the stomach in urticaria cases, published in the literature. He suggests a further study of these cases by some one who has access to a larger number of urticaria individuals.

THE DIGESTIBILITY OF EVAPORATED CREAM.

BY TIMOTHY MOJONNIER, M.S.,
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THE use of evaporated cream in preference to dairy and condensed milk has become so general that a study of its digestibility, and a comparison of the relative ease and rapidity of its digestion with raw, pasteurized and boiled milk is timely.

Evaporated Cream is a trade name employed by manufacturers to distinguish their preparation of unsweetened condensed milk from the older commercial "condensed milk" which is almost synonymous with the white pasty preparations owing their stability to the preservative influence of sugar. Evaporated cream is prepared by taking full cream cow's milk, sterilizing and evaporating it by special processes to a cream-like consistency, thus reducing its volume about two and one-half times. The advantages claimed are that the butter-fat is held in permanent suspension; an absolute freedom from bacteria so long as the air-tight container remains unopened; uniformity of composition and that the casein is more easily digested than in raw milk.

The method used for studying the relative digestibility of the different forms of milk was as follows: One lot of fresh milk was thoroughly mixed and divided into three portions. One portion was used for making the tests with the raw milk. A second portion was pasteurized by the usual method, that is, the milk contained in a glass flask was placed into a water bath, heated to 167° F., kept at that temperature for ten minutes and cooled. Finally the remaining portion was brought to a vigorous boil and cooled. The evaporated cream was taken from the cooking from which the original lot of milk had been removed. It was diluted before making the tests to the consistency of the fresh milk used.

Exact quantities from each kind of milk and from the diluted evaporated cream were measured in triplicate, diluted with water which had been heated to 40° C. and the precipitation made by means of very dilute acetic acid. The precipitate consisted, in the case of the raw milk, of casein and fat, while in all of the other cases it consisted of casein and fat together with part or all of the albumin. This procedure represents quite closely what occurs in the stomach when milk is taken. The well-known curdling of the milk in the stomach is due chiefly to the presence of acid.

The next step was to filter and wash the precipitate. It was then returned to the beaker in which the precipitation had been made and treated with 100 c.c. of artificial gastric juice. The juice contained 1.25 grams of pepsin powder (Merck U.S.P.) to every liter of .33 per cent. hydrochloric acid.

The artificial gastric juice was allowed to act upon the precipitates at body temperature for various lengths of time, at the end of which time 10 c.c. of formalin were added in order to check

the further action of the pepsin solution. The exact time when the gastric juice was added, as well as the exact time when the formalin was added, was carefully noted. The periods selected were respectively, one-half hour, one hour, and four hours long in all cases except with the evaporated cream, in which case the four-hour period was omitted.

The residues which remained undigested at the end of the given periods, were filtered upon folded filters and thoroughly washed. The amount of protein undissolved was then determined by the usual method.

The weight of protein undigested was subtracted from the weight of the total protein in the sample taken. The amount digested was then divided by the amount in the sample and the result multiplied by 100 to give the coefficient of digestibility in per cents. The results obtained are given in the following table:

TABLE 1.

Summary of results showing relative ease of digestion of evaporated cream, and raw, pasteurized and boiled milk.

Lab. No.		Number of determinations.	DIGESTIBILITY OF PROTEIN.		
			At end of half hour. Per cent.	At end of one hour. Per cent.	At end of four hours. Per cent.
150	Evaporated Cream.	3	90 93	93.83	. . .
151	Evaporated Cream.	3	89.96	91.37	. . .
	Average	6	90.44	92.60	. . .
140	Raw Milk	3	84.26	90.42	97 51
144	Raw Milk	3	86.43	88.19	95 98
	Average.	6	85 34	89.30	96 74
141	Pasteurized Milk . .	3	86.55	91 35	97.30
145	Pasteurized Milk . .	3	88.15	91.41	96.43
	Average..	6	87 35	91.38	96.86
142	Boiled Milk	3	89 70	91.85	96.15
146	Boiled Milk	3	87.08	89.33	96.21
	Average.	6	88.43	90 59	96.18

As reference to table will show, the protein in evaporated cream was found to digest a little more rapidly than that of either raw, pasteurized or boiled milk. It is fair to say that the results are quite comparable since the tests were made in the two series from the same lots of milk and identical methods of study were used each time.

In determining the digestibility of evaporated cream by means of artificial gastric juice, attention had to be directed entirely to the protein. As in the tests just reported, the protein was precipitated by means of very dilute acetic acid. The precipitate was treated with the artificial gastric juice for ten hours at body temperature. The undigested residue was then filtered off and the protein determined in it. Similar tests were made with raw, pasteurized and boiled milk. All of the results obtained are given in the table which follows.

The results, as shown by the table, obtained, show plainly that the protein in evaporated cream is as completely digested by artificial gastric juice, as that of the other forms of milk studied. By looking over what literature we had bearing upon this subject, we found a marked disagreement among investigators as to the influence of sterilization upon the digestibility of milk.

TABLE 2.

Total digestibility of protein in evaporated cream and in raw, pasteurized and boiled milk. Determined with artificial gastric juice.

Lab. No.		Number of determinations.	Per cent. of total protein digested by artificial gastric juice.
140	Raw Milk	3	96.00
144	Raw Milk.	3	96.99
	Average	6	96.50
141	Pasteurized Milk. . .	3	98 69
145	Pasteurized Milk. . .	3	98.83
	Average	6	98.76
142	Boiled Milk.	3	98 68
146	Boiled Milk.	3	98 11
	Average	6	98.40
150	Evaporated Cream. .	3	98 46
151	Evaporated Cream. .	3	99.09
168	Evaporated Cream. .	3	99.11
	Average	9	98.89

De Jagars (*Diet. and Hyg. Gaz.*, Vol. 12, 1896, p. 281) compared the digestibility of raw milk with cooked milk using pepsin and lactic acid in his work. He concluded as a result of his work that raw milk was more readily digested than cooked milk.

A. Stutzer (Landwirthsch. Versuchs. Stat., Vol. 40, pp. 317-319, 1891) found by tests with artificial gastric juice that the protein in raw milk was a little more readily digested than that of cooked milk.

On the other hand, Jemma (*Hyg. Gaz.*, Vol. 16, 1900, No. 2, p. 83) found by means of artificial digestion experiments that sterilizing did not impair the digestibility of milk.

Michael, also (*Hyg. Rund.*, 1899), concluded as a result of a number of artificial digestion experiments that sterilization did not lessen the digestibility of milk. His results, if anything, lean quite a little in favor of sterilized milk.

Again Fleischman, who holds a front rank among scientific dairymen, states emphatically that sterilizing makes milk more easily digestible. He compares the digestibility of raw milk with milk sterilized at a pressure of from one to two atmospheres, by means of artificial gastric juice.

In determining the digestibility of evaporated cream by means of natural digestion experiments, the experiments were made with two different subjects. The first was a baby girl a little over a year old. The second was a grown man, a laborer, in good health.

Diet.—The child was placed upon a diet consisting of evaporated cream, diluted with water and sweetened with cane sugar. The man was placed upon a diet consisting of evaporated cream, white bread crumb and granulated sugar.

TABLE 3.

Percentage composition of fresh foods and of air-dried feces.

Lab. No.	Material.	Per cent. nitrogen.	Per cent. water.	Per cent. protein.	Per cent. fat.	Per cent. carbohydrates.	Per cent. ash.	Total.
168	Evaporated Cream.	1.07	73.55	6.65	8.61	9.57	1.62	100.00
169	Sugar	. . .	.21	. . .	.08	99.68	.03	100.00
178	White Bread.	1.13	45.23	7.06	.53	46.57	.61	100.00
183	White Bread.	1.04	47.43	6.50	.41	45.05	.61	100.00
182	White Bread.	1.16	45.30	7.28	.50	46.17	.75	100.00
170	Feces.	4.26	11.38	26.64	8.17	32.67	21.14	100.00
171	Feces.	4.38	12.99	27.36	8.68	29.42	21.55	100.00
173	Feces.	5.76	12.84	35.97	12.65	22.30	16.24	100.00
184	Feces.	4.24	11.83	26.53	6.70	33.61	21.33	100.00
185	Feces.	5.80	9.38	36.26	8.66	28.22	17.48	100.00
100	Feces.	5.80	36.21	36.21	8.68	22.91	12.48	100.00

TABLE 4.

Results of Digestion Experiment No. 1.

Lab. No.	Material.	Weight total material. Grams.	Weight water-free material. Grams.	Weight protein. Grams.	Weight, fat. Grams.	Weight, carbohydrates. Grams.	Weight, ash. Grams.	Energy in total food Calories	Energy in evaporated cream Calories
168	Evap. Crm.	4941.90	1307.13	328.64	425.50	472.94	80.05	7883	7883
169	Sugar . . .	470.80	469.80	. . .	.37	469.29	.14	1974	. . .
	Total . . .	. . . . .	1776.93	328.64	425.87	942.23	80.29	9857	7883
170	Feces. . . .	89.70	79.49	23.50	7.33	29.30	18.96	332	312
Total amount digested			1697.44	304.74	418.54	912.93	61.23	9525	7571
Coefficient of digestibility of total food.			Per cent. 95.53	Per cent. 92.73	Per cent. 98.28	Per cent. 96.89	Per cent. 76.36	Per cent. 96.63	Per cent. 96.04
Weight of protein in feces not digested by pepsin solution				7.07	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Weight of protein in evaporated cream actually digested.				321.57	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Coefficient of digestibility of evaporated cream alone				Per cent. 97.85	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .

TABLE 5.

Results of Digestion Experiment No. 2.

Lab. No.	Material.	Weight, total material. Grams.	Weight, water-free material. Grams.	Weight, protein. Grams.	Weight, fat. Grams.	Weight, carbohydrates. Grams.	Weight, ash. Grams.	Energy in total food Calories.	Energy in evaporated cream Calories.
168	Evap. Crm.	4903.90	1297.08	326.11	422.23	469.30	79.44	7822	7822
169	. . . . .	433.95	432.14	. . .	.35	431.66	.13	1816	. . .
	Feces	. . . . .	1729.22	326.11	422.58	900.96	79.57	9638	7822
171		56.60	49.27	15.49	4.91	16.65	14.22	207	189
Total amount digested			1679.95	310.62	417.67	884.31	65.35	9431	7633
Coefficient of digestibility of total food			Per cent. 97.15	Per cent. 95.25	Per cent. 98.84	Per cent. 98.15	Per cent. 82.13	Per cent. 97.85	Per cent. 97.58
Weight of protein in feces not digested by pepsin solution.				4.38	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Weight of protein in evaporated cream actually digested by subject				321.73	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Coefficient of digestibility of protein in evaporated cream alone				Per cent. 98.66	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .

He was allowed to drink all the water that he cared for, which, however, was very little.

Method.—The method used in carrying on these experiments was that used by chemists and others who are carrying on the nutrition investigations which are being made by the U. S. Department of Agriculture, under the supervision of Prof. W. O. Atwater. Careful weighings were made of all the food used as well as of all the undigested residues. Lampblack was used as a marker to separate the undigested residues due to the diet under experiment, from that preceding and following same. A gelatin capsule containing the lampblack was given the subject the last meal before and the first meal after, the experiment.

The foods used and the undigested residues were analyzed by the methods of analysis of the Assn. of Official Agricultural Chemists. (Bull. 46, U. S. Dept. of Agriculture.) The urine from the man's experiments was carefully collected and the nitrogen in it determined by the usual method. This last step made it possible to determine the average daily income and outgo of nitrogen in the body and also whether the body was drawing on its own store of nitrogen or using

TABLE 6.

Results of Digestion Experiment No. 3.

Lab. No.	Material.	Weight, total material. Grams.	Weight, water-free material. Grams.	Weight, protein. Grams.	Weight, fat. Grams.	Weight, carbohydrates. Grams.	Weight, ash. Grams.	Energy in total food Calories.	Energy in evaporated cream Calories.
168	Evap Crm.	6958.15	1840.43	462.72	593.10	665.89	118.72	11099	11099
169	Sugar . . .	383.95	381.45	. . . .	.31	381.02	.12	1607	.
172	Bread . . .	1682.20	921.34	118.76	8.92	783.40	10.26	4073	. . .
	Total. . . .	. . . . .	3144.22	581.48	608.33	1831.31	123.10	16779	11099
173	Feces. . .	256.00	223.12	92 08	32.38	57.09	41.57	1084	678
Total amount digested			2921.10	489.40	575.95	1774.22	81.53	15695	10421
Coefficient of digestibility of total food			Per cent. 92.90	Per cent. 84.16	Per cent. 94.68	Per cent. 96.88	Per cent. 66.23	Per cent. 93.55	Per cent. 93.99
Weight of protein in feces derived from evap. cream not digested by pepsin solution				27.13	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Weight protein in evap. cream actually digested .				435.59	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Coefficient of digestibility of protein in evap. cream alone				Per cent. 94.14	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .

TABLE 7.

Results of Digestion Experiment No. 4.

Lab. No.	Material.	Weight, total material. Grams.	Weight, water-free material. Grams.	Weight, protein. Grams.	Weight, fat. Grams.	Weight, carbohydrates. Grams.	Weight, ash. Grams.	Energy in total food Calories	Energy in evaporated cream Calories
168	Evap. Crm.	4930.20	1304.03	327.85	424.49	472.82	79.87	7863	7863
169	Sugar . . .	441.40	440.47	. . .	.35	439.99	.13	1852	. . . . .
	Total	. . . . .	1744.50	327.85	424.84	912.81	80.00	9715	7863
184	Feces	46.00	40.55	12.20	3.08	15.46	9.81	166	147
Total amount digested			1703.95	315.65	421.76	896 35	70.19	9549	7716
Coefficient of digestibility of total food			Per cent. 97.68	Per cent. 96.28	Per cent. 99.28	Per cent. 98.30	Per cent. 87.74	Per cent. 98.29	Per cent. 98.13
Weight of protein in feces not digested by pepsin solution				3.49	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Weight of protein in evaporated cream actually digested by subject				324.36	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Coefficient of digestibility of protein in evaporated cream alone				Per cent. 98.94	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .

that contained in the food used. The results brought out the interesting fact that the nitrogen in the food not only supplied all that was necessary for the usual wear and tear of the body, but also in addition, in each experiment, it enabled the subject to store up nitrogen in his body. The average amount for the twelve days was equivalent to 8.93 grams, or about one-third ounce of protein per day.

In the case of the child each experiment covered one week—in that of the man, four days. The subjects were weighed at the beginning and at the close of the experiment. The child showed an average gain during each experiment of nearly one pound, which in itself is a very good showing. The man lost a little in weight during each experiment, most of which is attributed to a sudden change in diet. Both remained in good health and showed no digestive irregularities.

Woods & Merrill (Bull. 143, Off. of Exp. Stations, U. S. Dept. of Ag., p. 58) was used. This consisted in treating the undigested residues with artificial gastric juice, filtering off the undissolved portion and determining the amount of protein which was actually digested by the body. The facts thus found are brought out in the tables which follow.

The energy of the food was calculated, using the factors commonly used in such calculations, the energy of fuel values for the different nutrients being as follows: protein 5.9, fat 9.3 and carbohydrates 4.2. Calories per gram respectively.

Table 3 gives the percentage composition of the fresh foods and of the air-dried foods. Tables 4 to 9 inclusive give the results of the individual experiments. Table 10 summarizes the digestibility of the total food and the availability of the

TABLE 8.

Results of Digestion Experiment No. 5.

Lab. No.	Material.	Weight, total material. Grams.	Weight, water-free material. Grams.	Weight, protein. Grams.	Weight, fat. Grams.	Weight, carbohydrates. Grams.	Weight, ash. Grams.	Energy in total food. Calories.	Energy in evaporated cream Calories.
168	Evap. Crm.	6013 80	1590.65	399.92	517.79	575.52	97.42	9595	9595
169	Sugar . . .	407.70	406 84	. .	.32	406.40	.12	1707	. .
183	Bread . . .	1644.70	864.35	106.87	6.74	740.71	10.03	3804	. .
	Total	. . . . .	2661.84	506 79	524.85	1722.63	107.57	15106	9595
185	Feces . . .	214.40	194.29	77.74	18.57	60.50	37.48	886	504
Total amount digested			2667.55	429.05	506.28	1662.13	70.09	14220	9091
Coefficent of digestibility of total food			Per cent. 93.21	Per cent. 84.66	Per cent. 96 46	Per cent. 96.49	Per cent. 65.16	Per cent. 94.13	Per cent. 94.73
Weight of protein derived from evaporated cream, present in feces and not digested by pepsin solution				27 86	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Weight of protein in evaporated cream actually digested by subject				372.06	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Coefficient of digestibility of protein in evaporated cream alone				Per cent. 93.03	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .

The digestibility of the total food was found by dividing the total amount of each nutrient digested by the total weight of each respective nutrient in the total diet. The digestibility of bread and sugar have been quite exhaustively studied, so that by correcting for the amount of undigested matter due to these foods, it was possible to arrive at the digestibility of the evaporated cream alone.

Metabolic Products.—The feces contained in addition to the undigested residues due to the food, certain substances termed "metabolic products." These consist of residues of the digestive juices, bits of the lining of the alimentary canal, etc., and most of them contain nitrogen, like protein.

Several methods have been proposed for determining these metabolic products. In these experiments one of the methods recommended by

energy in both the total food and in the evaporated cream alone. Table 11 gives the digestibility of the protein of different kinds of milk and of evaporated cream as determined by different methods.

Digestion Experiment No. 1. Kind of food.—Evaporated cream diluted with water and sweetened with cane sugar. Subject.—M. E. C., girl 13½ months old. Weight.—At beginning 23½ lbs.; at end 25½ lbs. Duration.—Seven days, Dec. 30, 1904, to Jan. 5, 1905. (Table 3.)

Digestion Experiment No. 2. Kind of food.—Evaporated cream diluted with water and sweetened with cane sugar. Subject.—M. E. C., girl, fourteen months old. Weight.—At beginning 25 lbs.; at end 25½ lbs. Duration.—Seven days, Jan. 10 to 16, inclusive, 1905. (Table 4.)

Digestion Experiment No. 3. Kind of food.—Evaporated cream, cane sugar and white bread.

TABLE 9.

Results of Digestion Experiment No. 6.

Lab No.	Material.	Weight, total material. Grams.	Weight, water-free material. Grams.	Weight, protein. Grams.	Weight, fat. Grams.	Weight, carbohydrates. Grams	Weight, ash. Grams.	Energy in total food Calories.	Energy in evaporated cream Calories.
1?8	Evap. Crm.	6?57.30	1813.75	456.01	590.41	656.24	111.09	10936	10936
189	Sugar. . . .	503.60	504.53	. . .	.41	503.98	.15	2120	. . .
191	Bread. . . .	1800.00	984.60	131.04	9.00	841.06	13.50	4347	. . .
	Total	. . . . .	3302.88	587.05	599.81	1991.28	124.74	17403	10936
190	Feces.	250.90	216.48	90.85	21.78	57.58	46.37	981	543
Total amount digested			3086.40	496.20	578.03	1933.70	78.37	16422	10393
Coefficient of digestibility of total food			Per cent. 93.45	Per cent. 84.52	Per cent. 96.37	Per cent. 97.18	Per cent. 97.18	Per cent. 62.83	Per cent. 95.03
Weight of protein derived from evaporated cream present in feces and not digested by pepsin solution.				30.47	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Weight of protein in evaporated cream actually digested by subject				425.54	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Coefficient of digestibility of protein in evaporated cream alone.				Per cent. 93.32	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .

TABLE 10.

Digestibility of Total Food and Availability of Total Energy in Entire Food and in Evaporated Cream alone.

EXPERIMENT NO.	SUBJECT.	KIND OF FOOD.	COEFFICIENT OF DIGESTIBILITY OF TOTAL FOOD.					AVAILABLE ENERGY	
			Total Solids. Per cent.	Protein. Per cent.	Fat. Per cent.	Carbohydrates. Per cent.	Ash. Per cent.	in total food Per cent.	in evap. cream Per cent.
1.	Girl.	Evaporated Cream and Sugar	95.53	92.75	98.28	96.89	76.36	96.63	96.04
2.	Girl.	Evaporated Cream and Sugar	97.15	95.25	98.84	98.15	82.13	97.85	97.58
4.	Girl.	Evaporated Cream and Sugar	97.68	96.28	99.28	98.30	87.74	98.29	98.13
Average. .	. . . . .	Three Experiments.	96.79	94.75	98.80	97.78	82.08	97.59	97.25
3.	Man.	Evaporated Cream, Bread and Sugar. .	92.90	84.16	94.68	9?.88	66.23	93.55	93.99
5.	Man.	Evaporated Cream, Bread and Sugar. .	93.21	84.66	96.46	96.49	65.16	94.13	94.75
6.	Man.	Evaporated Cream, Bread and Sugar. .	93.45	84.52	96.37	97.18	62.83	94.36	95.03
Average. .	. . . . .	Three Experiments.	93.19	84.45	95.84	96.85	64.74	94.01	94.59

TABLE 11.

Digestibility of the protein of different kinds of milk and of evaporated cream as determined by different methods.

Kind of Milk.	No. of experiments.	Artificial Digestion.	Natural Digestion.	Natural Digestion with correction obtained by pepsin method.	Subject.
Evaporated Cream	3	. . .	94.75	98.48	Girl
Evaporated Cream	3	. . .	84.45	93.50	Man
Evapo ated Cream	3	98.89	. . .	. . .	. . .
Raw Milk	3	96.50	. . .	. . .	. . .
Pasteurised Milk.	3	98.76	. . .	. . .	. . .
Boiled Milk	3	98.40	. . .	. . .	. . .

Subject.—J. C., man, thirty-two years old. Weight.—At beginning, 171¼ lbs., at end, 170 lbs. Duration.—Four days, Jan. 11 to 14, 1905. During this experiment the subject eliminated 4,472.85 grams urine, containing 73.30 grams of nitrogen. The feces contained 14.73 grams and the total food 93.04 grams of nitrogen. This makes a daily gain to the body of 1.25 grams of nitrogen to 7.81 grams of protein. (Table 5.)

Digestion Experiment No. 4. Kind of food.—Evaporated cream diluted with water and sweetened with cane sugar. Subject.—M. E. C., girl, fourteen months old. Weight.—At beginning 25½ lbs.; at end 26 lbs. Duration.—Seven days, Jan. 11 to 17, inclusive, 1905. (Table 6.)

Digestion Experiment No. 5. Kind of food.—Evaporated cream, cane sugar and white bread. Subject.—J. C., man, thirty-two years old. Weight.—At beginning 175 lbs.; at end 170 lbs. Duration.—Four days, Jan. 26 to 29, 1905. During this experiment the subject eliminated 4,347.15 grams of urine containing 60.74 grams of nitrogen. The feces contained 12.44 grams and the total food 81.09 grams of nitrogen. This makes a daily gain to the body of 1.98 grams of nitrogen, corresponding to 12.38 grams of protein. (Table 7.)

Digestion Experiment No. 6. Kind of food.—Evaporated cream, cane sugar and white bread. Subject.—J. C., man, thirty-two years old. Weight.—At beginning 173 lbs., at end 171 lbs. Duration.—Four days, Feb. 8 to 11, 1905. During this experiment the subject eliminated 4,698.90 grams of urine containing 75.18 grams of nitrogen. The feces contained 14.54 grams and the total food 93.93 grams of nitrogen. This makes a daily gain to the body of 1.05 grams of nitrogen, corresponding to 6.56 grams of protein. (Table 8.)

Brief Historical Review.—Considerable research work has been done to determine the digestibility of different forms of milk by means of healthy subjects. A very brief review of the most important of these investigations would be of value at this time. (Tables 9 to 11.)

Hübner in Munich in 1876 found the undigested organic matter in a whole milk diet to amount to 5.4 per cent. of the total amount present in the milk used. He also concluded from his studies that young children digest milk more completely than adults.

Forster (*Zeits. f. Biologie*, 15, 1879, p. 135) found that 6.4 per cent. of the total solid matter in milk was undigested by a nursing child.

Prausvitz (*Zeits. für Biologie*, 1889) made studies with a man, using sterilized milk in his work. He concluded that the milk was very digestible and was one of the most useful, convenient and economical sources of protein.

Lange (*Jahrb. Kinderheilk.*, 39, p. 233) concluded that the nitrogen of cow's milk when diluted with milk sugar solution and sterilized is almost as thoroughly assimilated as that of mother's milk.

Listov (Inaug. Diss., St. Petersburg, 1892, p. 45) by studies with healthy adults, found that with sterilized milk 91.8 per cent. and with raw milk 93.6 per cent. of the protein was assimilated by the body.

Bendix (Am. Ins. Pasteur, Vol. 9, 1895, p. 362) studied the digestibility of boiled and sterilized milk by means of childre nabout two and a half years of age. He found as a result of his work that with boiled milk 89.53 per cent. of the protein was digested and with pasteurized milk 89.40 per cent.

Koplik (*N. Y. Med. Journal*, No. 15, 1895, p. 455) found with a child fed upon sterilized milk that 95.7 per cent. of the protein was digested; when fed upon pasteurized milk 95.4 per cent. He reports but few results.

Atwater (Conn. Storrs Station Rept. 1896, p. 163) by studies with a man placed upon an entire fresh milk diet found 91.53 per cent. of the protein was digested.

Conclusions.—As a result of the foregoing the following conclusions seem fairly well justified:

1. The protein in evaporated cream digests a little more rapidly when treated with artificial gastric juice than does that of raw, pasteurized or boiled milk. The protein in evaporated cream precipitates in a fine, flaky condition, whereas that of raw milk is inclined to be more in the form of a lumpy curd.

2. The protein in evaporated cream is almost entirely soluble in artificial gastric juice. Its total digestibility by this method compares very favorably with that of raw, pasteurized and boiled milk. The small difference found was in favor of the evaporated cream.

3. By means of natural digestion experiments with a child and with a man, the child was found to digest evaporated cream a little more completely than did the man. As a result of three experiments with each subject, it was found that in the case of the child that only 3.31 per cent. and in the case of the man only 6.81 per cent. of the entire solid matter of the food remained undigested. Forster (just quoted) found 6.4 per cent. of the total solids of the milk of a nursing child to be undigested.

4. The total digestibility of the protein in evaporated cream, after making correction for the metabolic products in the feces, in the case of the child was found to be 98.48 per cent., or very nearly what was found by means of artificial gastric juice, namely 98.89 per cent. With the man it was found to be 93.10 per cent. Both of these values are highly satisfactory for evaporated cream.

5. The butter fat and milk sugar were both very completely digested and assimilated by the two subjects. The girl digested 98.80 per cent. of the fat and 97.78 per cent. of the sugar. The man digested 95.84 per cent. of the fat and 96.85 per cent. of the sugar.

6. The child digested nearly 18 per cent. more

of the mineral matter than did the man. This accords with the accepted theory that a child requires more mineral matter in proportion to its body-weight than does an adult, because its bones are growing and developing.

7. The total energy or fuel value of evaporated cream is almost entirely available to the body. The child used 97.25 per cent. and the man 94.59 per cent. of the total energy contained in the evaporated cream which they used.

8. The health of both subjects was normal during the experiments. The child gained in weight, an average of about one pound a week during the three experiments and relished its diet. The man lost in body-weight but gained in protein during all of the experiments to the amount of nearly one-third ounce of protein per day.

9. Evaporated cream, like other forms of pure milk, is an economical article of diet because its nutrients are practically all available to the needs of the body.

THE DUODENAL ULCER, BY ONE OF ITS VICTIMS.[1]

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BOAS has said, and correctly so, that of all ulcerative processes of the gastro-intestinal tract the duodenal ulcer demands the most careful consideration, because of its anatomical position, obscure symptomatology and diagnostic signs, and the serious complications which may develop during its course.

Unfortunately, the great majority of writers have spoken too freely on the extreme rarity of this disease, especially in our country, consequently it has not received the consideration it justly deserves. This fact was brought home to me last August. While I freely admit that it is by no means a frequent disease, still there can be no doubt, as I hope to prove, that it is not as infrequent as is generally supposed. Moynihan [1] reports 51 cases with operation occurring within his own practice from January, 1900, to September, 1904. Of these there were seven perforations (with 2 deaths), 22 associated with gastric ulcer (with 1 death), 23 with duodenal ulcer alone (with 1 death). Mayo [2] reports about the same number of cases.

What do these figures go to prove? First, that the relative frequency of duodenal to gastric ulcers is much greater than text-books and other statistics show; and second, that the association of the two is quite frequent.

Site.—It is usually confined to the first or oblique portion of the duodenum, seldom in the perpendicular or descending, very rarely in the transverse. In Collins's [3] 262 collected cases, perforation occurred within two inches of the pylorus 242 times, 14 times in the descending portion, and 6 times in the transverse. Perry and Shaw [4] found that in 141 cases it occurred 123 times in the first, 16 times in the second, and 2 times in the third. In Schwartz's [5] case the perforation was just below or on a level with the ampulla of Vater. In Moynihan's 51 cases, all the perforations,[7] and 43 of the chronic cases were in the first portion, only 1 being in the second. From these figures and others we may safely say that ulcers in the first portion of the duodenum are ten times more frequent than in the second.

Number.—Usually solitary, but may be multiple. In one of Moynihan's recent cases, where perforation had taken place on the anterior wall, immediately opposed to it on the posterior was another similar in size and shape. Moynihan was also the first to call attention to the association of duodenal and gastric ulcers, in his paper before the Clinical Society of London, in 1902. In his series of 44 cases, 22 were associated with gastric ulcer (50 per cent.); Mayo's per cent. is a little higher. This he attributes to the excess of HCl accompanying gastric ulcer. However, Howard [6] states that in 82 consecutive cases of gastric and duodenal ulcers occurring at the Johns Hopkins Hospital, hyperchlorhydria was present in only 26.4 per cent. This is quite contrary to the statements of Mayo, Riegel and others. Mayo, in a recent paper, says, "two facts are prominent, (1) that 75 per cent. of the gastric ulcers lie in the grinding apparatus of the pyloric end, and (2) that sometimes in the history of the ulcer, and in the majority of cases at all times, there is a relative increase in the secretion of hydrochloric acid, and, whether cause or effect, this effect is a most important etiological factor."

To recent surgery upon the stomach and gall-bladder must be given the credit of establishing the important point that gastric ulcers are not always solitary—quite the reverse of what the various text-books claim—and that duodenal are associated with gastric ulcers in about one-half of all cases.

Location of the Ulcer.—By far the most frequent seat is on the upper portion of the anterior wall. Oppenheimer [7] cites 15 cases of perforation, 11 of which occurred on the wall, 3 on the posterior, and 1 on the superior. In Collins's 119 cases of perforation in the first portion, 68 were on the anterior wall, 39 on the posterior, 10 on the superior, and 1 on the inferior. In 8 perforations of the second portion, 5 were on the internal wall, 2 on the posterior, and 1 on the external. The position of the ulcer is of great surgical importance. The anterior perforations are not so likely to be walled off, therefore the intestinal contents escaping into the general peritoneal cavity produces a rapid general peritonitis.

Etiology.—In my previous remarks I have not attempted to offer anything new, but rather to

[1] Read before the North Carolina State Medical Society.

sum up the results of the most recent investigations, both in this country and abroad. I shall now present my own theory in regard to the etiology of the duodenal ulcer and its relation to the gastric.

Sex.—It is much more frequent in males, the ratio being 4 to 1 (Osler), 5 to 1 (Mayo), 6 to 1 (Weir), 5 to 1 (Collins), 6 to 1 (Perry and Shaw), 2.5 to 1 (Mayo and Graham), whereas Moynihan's was much less. In his 51 cases there were 32 males and 19 females. If statistics from the various hospitals be true in regard to the greater frequency of gastric ulcer in women, the above figures are interesing, especially when we recall the fact that the pathogenesis of the duodenal and gastric ulcer is said by the most eminent authorities to be identical.

Age.—A duodenal ulcer may occur at any age, even in infancy. T. D. Lister and Spiegelberg have each observed a duodenal ulcer in an infant three days old. Chvostek, in 87 post-mortem examinations in children under ten years of age, found duodenal ulcer in 5. Oppenheimer has reported 15 cases of melena neonatorum. Similar cases have been reported by Henoch, Zerschwitz and Dusser. Collins's table of 297 cases is the most complete.

Under 10 years of age	42 cases
Between 10 and 20 years	24 cases
Between 30 and 40 years	52 cases
Between 40 and 50 years	46 cases
Between 50 and 60 years	41 cases
Between 60 and 80 years	28 cases
Between 80 and 95 years	3 cases

Race.—I could find no figures on this point.

Nationality.—It is certainly more frequent in Germany and England than in America. In the United States it is much rarer in the South than in the New England States and California.

Occupation.—Occupation plays an unimportant rôle. However, it might be well to say that an indoor life predisposes to ulcer more than an outdoor life.

Family History.—Heredity, so far as I have been able to see, plays little or no part. In the majority of cases there was no history of stomach trouble.

Personal History—Previous Stomach Trouble.—Unfortunately the statistics are not satisfactory, but we may feel safe in saying that a large per cent. of all cases have had, previous to the symptoms of ulcer, some disturbance of digestion, as discomfort after meals, sour eructation and pyrosis.

Diseases of the Heart and Blood Vessels.—It is possible for arteriosclerosis to play some part. It predisposes to thrombosis. By palpation of the peripheral vessels clinically, and noting the macroscopic changes at post-mortems, it was seen to be present in 48.8 per cent. of the series of gastric and duodenal ulcers occurring at the Johns Hopkins Hospital; to a very marked degree in 22 per cent.

Endocarditis.—This also deserves some consideration, as it may give rise to embolism.

Bright's Disease.—This is considered by many as an important etiological factor. The supporters of this theory claim that the necrotizing effect of urea, or its derivative, ammonium carbonate, may manifest itself in the first portion of the duodenum as well as in the lower portion of the bowel.

Chlorosis is a most important factor in gastric ulcer, particularly in young girls. It was present in a marked degree before the ulcers developed in 73 per cent. of Fenwick's cases. Osler says that "anemia and chlorosis predispose strongly to gastric ulcer, particularly in women, and in association with menstrual disorders."

Syphilis.—It might be well to also mention syphilis. There is a possibility of a specific endarteritis.

Burns.—The most generally accepted factor in the production of duodenal ulcers is external burns. Holmes, in 125 cases of external burns, reports 16 cases; Perry and Shaw, in 149 cases, found 5 duodenal ulcers; and Collins attributes 38 of his 297 cases to the same cause. The time of the appearance after the burn is from one day (Curling) to one or two weeks (Holmes).

Hunter's theory falls short in making clear the relation between cutaneous burns and duodenal ulcers. He injected toluylenediamin into animals, and this so changed the composition of the bile that ulcers were formed in the duodenum. He argued that, in some way, changes in the skin, due to the inflammation, produced the same changes in the bile as did the toluylenediamin. In his experiments, however, the ulcers were below the entrance of the bile duct—just the reverse of what is usually the case of burns.

The most recent literature on the subject says the ulcer is due to a septic infarct. Lockwood's experience seems to give some weight to the above argument, since in his 138 cases of burns treated with all possible antiseptic precautions, there occurred only one ulcer. But let me ask this question: Why should an infarct be formed only in the duodenum? Why are other organs not affected? Are there any local peculiarities of circulation in the duodenum, particularly the first portion? To me the above theory is a poor one, and absolutely without any foundation.

It is a well-established fact, by the modern theories of immunity, that intestinal parasites are protected from the digestive ferments in which they live, by antidigestive ferments found in their skin. It has also been proven that the alimentary walls are able to protect their tissues from self-digestion (autolysis) by certain antibodies contained in their epithelial cells. Any diminution of these bodies may, and a marked diminution does result in autolysis, or self-digestion. Now, here is the point I wish to make. It is conceivable that in external burns, toxic substances are absorbed and are specific and destructive to the antibody in the epithelial cells

of the duodenum. As soon as the antibodies are diminished to a sufficient quantity, an ulcer is the result.

Naturally the question of Lockwood's cases arises. Why was it that there was only one ulcer when antiseptic precautions were taken? This does not in the least shake my belief in the theory I have advanced. The toxin due to the sepsis probably combines with the other toxin, and may assist or even be necessary to bring about a reduction of the antibodies in the epithelial cell of the duodenum—the association of toxins.

Among the predisposing causes, the corrosive action of the hydrochloric acid is one of the most important. Ewald succeeded in producing duodenal ulcers in animals by introducing hydrochloric acid into the stomach. Von Mering and Moritz have also proven by experiments that the stomach promptly and copiously expels water into the intestine when an irritant such as alcohol is introduced, thereby protecting itself from injury by concentrated solutions or irritants. It remains yet to be proven that the duodenum possesses such a property.

Any disproportion between the composition of the blood and gastric juice may give rise to ulcer, either in the stomach or duodenum. How does it do this? By diminishing the antibodies in the epithelial cells. The disproportion may be due to two causes, viz., anomalies in the composition of the blood, as chlorosis, anemia, suppression of menses, etc., or an increase of secretion of the gastric juice, particularly the hydrochloric acid. In case of the former it is a matter of lowered resistance; in the latter, an increased virulence.

This explains the greater frequency of gastric ulcers in women, and duodenal in men. It also accounts for the fact that gastric ulcer, which is more common in the female, is usually not associated with hyperchlorhydria, whereas in the male the reverse is the case.

Symptoms and Diagnosis.—The most remarkable fact is that a duodenal ulcer may give rise to no symptoms until perforation takes place. Such a latent course is by far more frequent than in gastric ulcer.

Subjective.—Pain may be slight, producing only a feeling of uneasiness in the epigastrium. again, it is intense, of a burning, gnawing, boring character, which may radiate downward, toward the sides, or upward toward the right shoulder. This was true in my own case. When severe, it was almost always a little to the right of the middle line, about on the level with a prolongation of the parasternal line, two centimeters below the gall-bladder.

I agree with Moynihan and others that the time of the onset of pain after food affords valuable information in our diagnosis. If the pain does not make its appearance until several hours after a meal, the ulcer is either at the pylorus or very near it. The pain, too, is always relieved by the presence of food in the stomach—a glass of milk, or, better still, a boiled egg. The food relieves the pain either by reflexly closing the pylorus, thereby preventing the escape of the stomach contents, or by diluting the hydrochloric acid which is present in an excessive amount.

Frequently it is associated with a gastric ulcer, in which case the diagnosis is more difficult. Here we would have pain coming on shortly after food is taken, which gradually becomes easier, to return the second time with greater severity.

Objective.—The typical point of tenderness should be along a continuation of the parasternal line, coinciding with the area of pain, about two centimeters below the gall-bladder. In my own case this was not noticeable all the time. Vomiting may or may not be present. It is purely of a reflex nature and occurs only when the pain is very severe (about 17 per cent.). However, it is of great diagnostic value when coming on hours after meals with bile and blood. Jaundice is rare, but may be present. Hemorrhage, according to Weir, occurs in one-third of all non-perforating ulcers. Oppenheimer found it in 50 per cent. of his. Others place the figures even higher. It may be very small, or so profuse as to produce death from shock or collapse. If in a sufficient quantity, the stools have a tarry color. The hemorrhage, however, may sometimes be fresh, and, if associated with hemorrhoids, misleading. The amount is usually much more profuse than in gastric hemorrhage on account of the large size of the vessels encountering in this region.

Prognosis.—In Collins's 262 cases perforation occurred 181 times (69 per cent.). However, this seems to be too high. Of these 181 perforations, there were 125 cases of general peritonitis, all of which resulted fatally. In Moynihan's 51 cases, you remember, there were only seven perforations with two deaths. Frequently, adhesions take place between the duodenal wall and adjacent viscera, viz., the liver, pancreas, etc. Then, too, the ulceration may extend into the aorta, superior mesenteric vein, hepatic artery, and portal vein. If the perforation is on the posterior wall, which, fortunately, was true in my own case, the intestinal contents may escape into the lesser peritoneal cavity, producing a subphrenic abscess. However, such is not the usual occurrence. The perforation in the vast majority of cases is through the anterior wall into the general peritoneal cavity, producing all the symptoms of shock and collapse, followed by a fatal peritonitis.

Treatment.—Absolute rest in bed; restricted diet; alkalies to counteract the acidity of the gastric juice. If there is not immediate improvement, or if there is any hemorrhage, while under proper treatment, I should say the case becomes a surgical one. In the hands of a competent surgeon, gastro-enterostomy is by far the safest plan.

If my theory is right, it is only a question of

time when the work which is now being done on immunity will take all these cases from the surgeon's knife.

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PNEUMOTHORAX, WITH A REPORT OF A CASE COMPLICATING A LOBAR PNEUMONIA.

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PNEUMOTHORAX, by the average practitioner, is commonly regarded as a diseased condition frequently met with; but those who will carefully study the existing statistics upon the subject will find that such is not the true state of affairs. David W. Finley, in Allbutt's "System of Medicine," says: "Although the causes leading to the production of pneumothorax are numerous, the disease itself is comparatively rare." In Saussier's 131 cases, and in the statistics of all others, no mention is made of the occurrence of a pneumothorax during the existence of an attack of lobar pneumonia.

A condition of pneumothorax is most often met with in pulmonary tuberculosis; 80 to 90 per cent. of all cases being of this origin. Even in tuberculosis its occurrence is not remarkably frequent. The various authorities place its frequency as follows: West, 5 per cent.; Eichhorst, 5 per cent. in 300 cases; Gutman, 4.2 per cent. in 2,200 cases; Weil, 10 per cent. in 355 cases; Biach, in 58,731 cases of pulmonary tuberculosis, found it but 435 ties, or less tha n1 per cent. Fussell and Riesmann find that it may occur anywhere from 8 per cent. to 1 per cent. in all cases of phthisis.

Among the other conditions which have been cited as an inciting cause of the complication are: Empyema, gangrene of the lung, abscess of the lung, rupture of an infarct in the lung during organic heart disease, perforation of the pleura through the diaphragm, perforations by wounds in the chest, local disease in the pleura, such as new growths, pus, etc.; erosions of the bronchi in septic pneumonia of the bronchial variety (Osler) may also cause the condition.

A larger proportion of the cases are met with between the ages of thirty and forty. It is more common in males than in females because the former exert their muscles more vigorously than females. Dyspnea is not often present and cyanosis is not constant. Pain is always noted at the onset of the attack, though it may not be severe, and as a rule does not last more than thirty-six hours.

The most common of the inciting causes are: sudden spasmodic attacks of coughing, and the strain in the lifting of heavy weights. There is no relation between the amount of lung involvement by tuberculosis or other disease, and the occurrence of the lesion. As has been before remarked, pneumonia is but seldom followed or complicated by a pneumothorax, but the following case, which occurred in the writer's practice during the past winter, is believed to be unique, and illustrates a condition which must of necessity prove fatal:

Case.—Henry T., a large, robust man, aged fifty-four years, had for years regularly imbibed large amounts of alcohol in the form of whisky and wine. For several winters he had had attacks of bronchitis, which lasted throughout the season in spite of the best medical attention. In June, 1904, he was seized with a severe chill and pain in the left side. On the following day he was so prostrated that he was compelled to remain in bed and to summon his physician. Examination revealed a perfectly frank lobar pneumonia involving the whole of the left lower lobe of the lung. The temperature at that time was 104.3° F., and there was considerable cyanosis and some delirium.

The disease ran a perfectly uneventful course until the evening of the seventh day, when the temperature suddenly rose to 106.2° F., and the patient became wildly delirious. By means of cool sponges the temperature fell to 100° F. at the end of four hours, and the patient passed the rest of the night most comfortably. The following morning at ten o'clock the temperature had dropped to normal and remained there.

On the morning of the tenth day, while the writer was visiting the patient, and had only just bid him "Good-morning," and was about to leave the sick-room, the patient was seized with a sharp, though not particularly hard, fit of coughing. In the midst of this he clapped his hand to his left side and cried out with pain. Dyspnea developed very rapidly and became most marked. Shortly after this, cyanosis appeared and became intense. Morphine to a grain and a half was administered before the pain could be controlled, but this failed to induce sleep.

Examination of the chest showed an almost complete tympany on percussion over the whole left side of the thorax. On auscultation, the voice sounds had lost the intensity, which had been present over the consolidated area, but there was distinct amphoric breathing. Succussion could not be elicited. The coin sound was very distinct over the whole left side. No evidence of fluid could be made out in the pleural cavity.

At this time Dr. S. A. Brown, who was called in consultation on the case, confirmed the diagnosis of a pneumothorax. The patient's chest

was strapped with adhesive plaster and he was made fairly comfortable, though all of the pain and dyspnea were not lost. Cyanosis still persisted. In twelve hours the temperature had risen to 103.6° F., and delirium rapidly returned, accompanied by low muttering and picking at the bedclothes. The pulse was strong, but very rapid, with fair tension. From this time on the patient's condition became worse and pulmonary edema developed. Death took place about forty hours after the development of the pneumothorax.

This interesting case, with the production of a pneumothorax, teaches us that there may be a new and hitherto unmentioned fatal mode of termination for a frank pneumonia. At the patient's age the lung tissue had undoubtedly become emphysematous, and this change was most probably the underlying cause in the production of the pneumothorax at the fit of coughing. Hamilton, in the *Montreal Medical Journal*, Vol. xix, 1898, has reported a case where pneumothorax was followed by a pneumonia, but the writer has been unable to find a single reference in the literature where a perfectly frank pneumonia was ever followed by a pneumothorax.

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EXTRAVISCERAL RUBBER LIGATURE IN GASTRO-ENTEROSTOMY.

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IN the December number of *Northwest Medicine*, the writer published an article on an extravisceral silk ligature in entero-enterostomy Two patients had been operated upon in which entero-enterostomy had been done. One was done to correct the vicious circle following a gastro-enterostomy, and the other was performed in connection with a primary gastro-enterostomy. The results were satisfactory. In the article I also reported experiments upon both dogs and hogs, with good success and good results, one of which was illustrated in the article.

This method was very similar to the one here outlined, except that no cut was made and the silk ligature included all the coats. It was found, however, that the method could not be well applied to the wall of the stomach because of its great thickness. A friend of mine suggested that if I could remove the outside coats and leave only the mucous membrane, possibly I might be more successful. This did not prove a success when the silk ligature was use as the pressure exerted on the stomach necessary to tie the knot could not be regulated; consequently, the mucous membrane would either be cut by the silk thread or there would not be sufficient pressure to cause necrosis.

After studying this question for some time, the idea of using a rubber band, of the kind used in drug stores for holding a wrapper on a bottle or package, came to me. Furthermore, instead of removing the coats entirely, I found that by making a circular cut down to the mucous membrane, pressure from the opposite side of the stomach or intestine would cause herniation of the mucous membrane. Ligating these two pieces of mucous membrane with rubber ligature, as will be shown, produced results which were entirely satisfactory. Thus, Fig. 1 shows an ideal result, following a gastro-enterostomy on the stomach and intestine of a pig, one week after operation. Fig. 2 shows a smaller opening two weeks after an operation, the smaller size being due, apparently, to a greater contraction of the opening during the suturing.

My results seem to show that the size of the opening depends largely on the amount of pursing of the wound by the suture in doing the sewing. Apparently the muscular edges remain where they are left when the suturing is completed. One result was a failure to cut through the stomach mucous membrane, because we used a rubber band which was too strong and was therefore not put on extreme tension, which I believe to be an absolute necessity in the operation. A very small rubber band with all the tension it will bear is much better and does less immediate damage to the mucous membrane, while it is being put on, than a large band. It will be noticed in the specimens shown that the mucous membranes are cut off squarely and abruptly. I also found in all the experiments that, no matter where the mucous membrane is tied, it apparently retracts to the level of the cut in the muscular wall.

The operation on the human subject is to be performed as follows: First, make the incision both in the abdominal wall and mesocolon in exactly the same manner as if the short loop operation were to be done with clamps or the McGraw ligature. The stomach is pushed down through the mesocolon from above, by the hand of the operator or assistant, and held there. Second, a circular button is cut with a sharp knife down to the submucous connective tissue, great care and caution being exercised not to cut the submucous plexus of vessels. It will be noted that, as the mucous membrane is approached, the muscular fibers, both in the wall of the stomach and in the button, contract, leaving quite a wide circular cut. The same thing is done with the intestine except that the button is made oblong, parallel with the axis of the intestine, in order not to encroach too much on the lumen of the intestine and also to avoid the

FIG. 1.—Opening in pig's stomach one week after operation by extravisceral rubber ligature. Exact drawing as to size and appearance of opening. Specimen lying in a dish.

Fig. 2.—Specimen opening in pig's stomach removed two weeks after operation. Small size of opening produced by pursing of wound in suturing.

larger vessels. This part of the operation is illustrated in Fig. 3. Third, pick up the button and mucous membrane gently with a wide forceps like a sponge holder, or, if preferred, with the fingers; a silk or linen thread is then laid across one side of the wound, one end being held by an assistant, the other lying loose. A rubber band of the size of No. 14 braided silk is cut in two, making of it a thread instead of a band. The mucous membrane is pulled out as far as slipping. The method of suturing is illustrated in Fig. 5. The suture as shown is continued all the way around, and the last end is tied with the end left loose for this purpose at the starting point.

As this is all of the original part of the operation, I will show no further details lest I might complicate it, inasmuch as the rest of the operation would be done in the manner ordinarily practised by the operator. If the operation

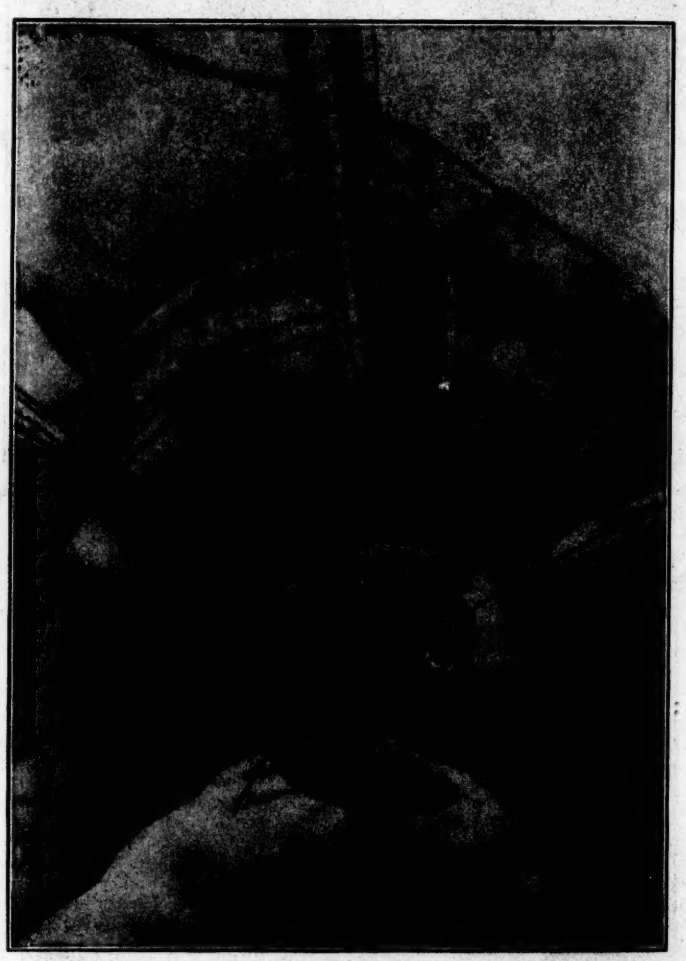

Fig. 3.—Buttons cut out down to submucous coat, showing retraction of muscular fibers from edges of wound.

possible, without tearing or injuring it, so that as big a bite as possible may be cut out. One end of the rubber string is held with a pair of forceps by an assistant, while the operator takes the other end, with or without forceps, and proceeds to wrap the rubber around the mucous membrane, including the thread, which is to tie the rubber. If the rubber is as small as it should be, ten or twenty turns should be made. The string is tied around all the rubber to prevent

proves as successful and satisfactory clinically as it has experimentally, it should present the following advantages: First, no clamps are used and no special apparatus is necessary. Second, no opening is made into the intestine or stomach at the time of the operation, hence the danger of infection is minimized. Third, it is easily and quickly done. I think, however, that the operation will not be ready for general use until more experimental work can be done and

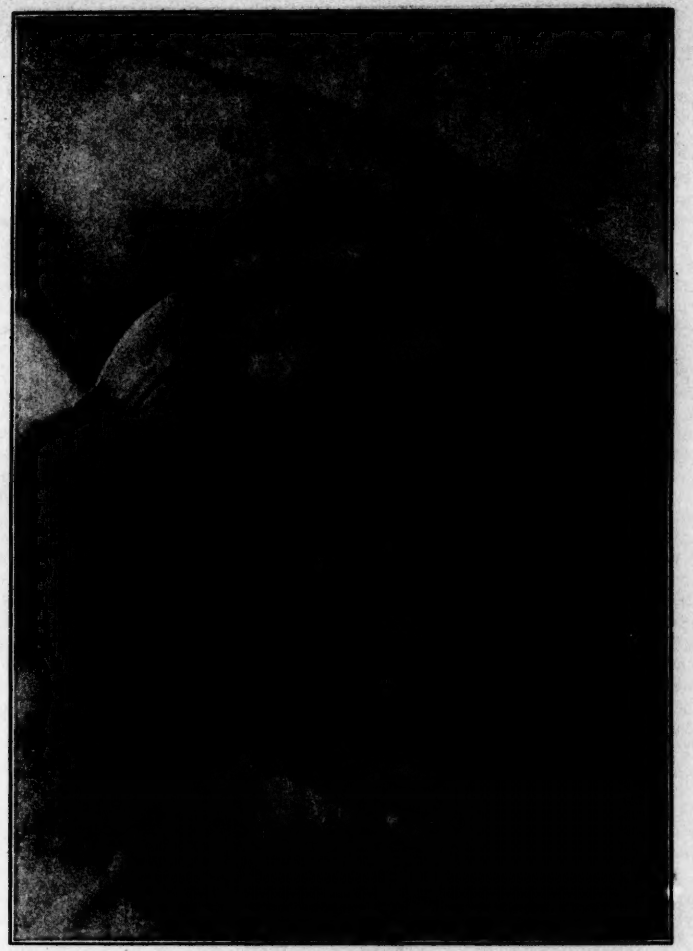

Fig. 4.—Knuckles of mucous membrane of intestine tied off by rubber ligature shown below. Rubber ligature being applied to mucous membrane of stomach above. (COFFEY.)

more accurate data obtained. As far as my work has gone with it, the results have been all that could be expected; but there may be points in perfecting the technic yet to be worked out.

The Chemical Correlations of the Functions of the Body.—In the Croonian Lectures for 1905 (*Lancet*, August 5, 1905) E. H. STARLING deals in Lecture I with the chemical control of the functions of the body. In the lowest organisms the only adaptations are those to environment, and in these cases the mechanism is almost entirely chemical. Thus food is obtained, harmful media avoided and digestion accomplished. In the lowest metazoa there is still no trace of a nervous system, and cellular coordination is determined by chemical means. In the higher metazoa the quick motor reactions are due to the nervous system, but they involve no abrogation of the more primitive chemical ones. The chemical reactions of the body can be divided into two main classes: (1) Those evoked in consequence of changes impressed upon the organism as a whole from without; and (2) those acting entirely within the body. The first class includes reactions of the body to chemical poisons produced by bacteria or higher organisms. If it is concluded that the coordinations of the body are carried out by chemical means, then emissaries must belong to Ehrlich's second order of substances acting on the body and must fall into the same category as drugs. Chemical reactions of the body are for convenience divided into two classes, (*a*) those which increase the activity of an organ; (*b*) those which increase growth of tissue or organ. The first class is discussed. How is the respiratory center aroused to increased proportional activity to the increased metabolism of a distant muscle? A nervous path can be excluded. By experiment the path is known to be the blood and the exciting agent carbon dioxide, a product of activity common to all protoplasm which must be excreted as a condition for further cell activity. This presents a clue to the evolvement of the more complex correlations. The only other example of such a reaction is found in the extract of the suprarenal gland. The medulla of this gland is genetically part

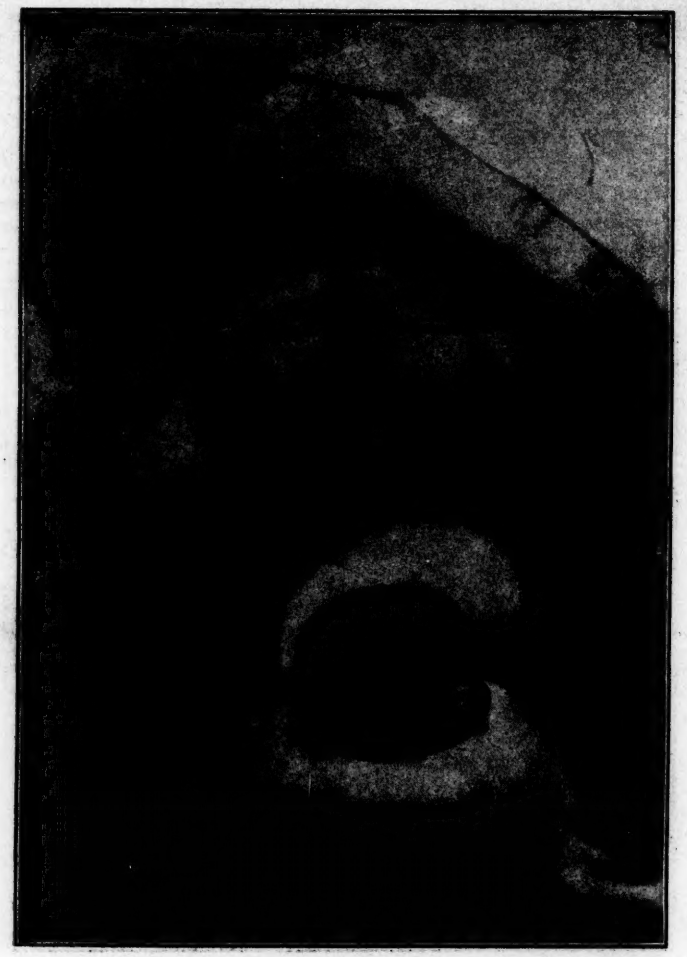

Fig. 5.—Method of suturing with a continuous suture. (COFFEY.)

of the sympathetic system, and to it the action of the secretion is apparently confined. As an antithesis to adrenalin it is found that every organ, when active, is supplied with more blood in consequence of vasodilatation. Boiled extract of organs have, when injected into the circulation, in instances produced vasodilatation of the same organ. Too much stress is not to be laid upon this. Diabetes can be artificially produced by extirpation of the pancreas, but the exact nature of this pancreatic substance has not been ascertained.

Carbohydrate Metabolism.—F. W. PAVY, in the third lecture on carbohydrate metabolism (*Lancet*, August 5, 1905), describes a theory of carbohydrate assimilation. The absorbed material passes into, and becomes a component of, the living matter. In other words, it is made to form a part of bioplasm in process of growth. In digestion it is not only necessary that large molecules be broken down to promote diffusibility, but also that they be adopted to become incorporated. The lymphocyte is considered the incorporating element. It is noted that lymphocytes in the blood increase after eating. Lymphocytes contain proteid, and proteid contains locked-up carbohydrates. The theory that white blood corpuscles pass from lacteal to capillary by traversing the wall of the latter is discredited. The lacteal is considered nature's channel for lymph cells, all other paths being supplementary. The intestinal villi are regarded as their propagating ground, whence they traverse the lacteals acting as food carriers. The union of food and lymphocyte is one of affinity. Exception is taken to the view of Halliburton that food is first carried to, then synthesized in, the tissues. The assimilation property of lymphocytes is analogous to the phagocytic action of other white cells. Food into lymphocyte, lymphocyte into proteid, proteid into tissue may be taken as the chain. The formation of fibrinogen, globulin and albumin of the blood is a process of autolysis. When the supply of carbohydrate is large, some escapes and reaches the portal circulation. This is transmuted into glycogen, and if this process is complete it is prevented from reaching the general circulation. Glycogen is regarded simply as a cleaved off storage material. It is transported from the liver as a proteid side chain to the tissues where it is removed for subjection and utilization. Another

method of the disposal of carbohydrate is its conversion into fat. This duty is assigned to the superficial epithelial cells of the villi and to the liver cells. Conclusions drawn in regard to diabetes from this point of view are that it is the result of a wrong carbohydrate metabolism on the side of assimilation and in some cases that of breaking down as well.

PATHOLOGY AND BACTERIOLOGY.

Fate of Digestive Ferments in Intestinal Tract.—Small amounts of pepsin occur quite normally in the urine, and J. GROBER (*Deutsch. Arch. f. klin. Med.*, Vol. 83, Nos. 3 and 4) believes that they are not derived from absorption from the intestinal lumen, but from the glands directly. The pepsin and trypsin which pass into the intestinal lumen are eventually destroyed, so that, under normal conditions, neither may be found in the feces. In diarrhea, however, first trypsin and then pepsin may be detected. The pepsin is normally destroyed by the alkaline secretion of the small intestines; the trypsin by the secretion of the large intestines. Intestinal worms possess certain specific bodies (antiferments) which protect them against the proteolytic action of the ferments.

Form of Heart Muscle Nuclei.—If the heart muscle be examined in systole and in diastole, a marked difference in the appearance of the nuclei will be observed. In the former case, they are short and broad; in the latter, much longer and more slender. Particularly long nuclei have been described as "Leistenkerne," and were supposed to indicate beginning hypertrophy of the heart. R. INADA (*Deutsch. Arch. f. klin. Med.*, Vol. 83, Nos. 3 and 4) states, however, that they merely indicate a beginning degeneration. This author also studied the effects of an artificially induced aortic insufficiency upon the condition of the aortic walls. In a series of animals, the aortic valves were punctured in the usual way, but even after months changes, which might be looked upon as beginning arteriosclerosis, could not be found. The vessel was always more tortous than under normal conditions, but this was probably due to insufficient contraction of the vascular musculature. In two animals there were slight lesions in the aortic walls, but these were probably traumatic, and resembled in every way the changes found after adrenalin injections (degeneration of the media, without implication of the intima).

Ear Complications of Cerebrospinal Meningitis.—CHRISTOPHER J. COLLES (*Med. Rec.*, September 9, 1905) considers as proven the fact that deafness following cerebrospinal fever is usually caused by extension of the inflammatory process to the labyrinth, and especially is it true in those cases of profound and lasting deafness. This opinion is borne out by actual post-mortem findings. Pathological lesions which have been observed are detachment of the mucous lining of the vestibule, thickening and loosening of the lining membrane of the semicircular canals, semifluid purulent masses in the anterior canal, and fibrinous adhesions between the bones of the internal ear and the walls of vestibule. It has been shown that a free communication exists between the endolymphatic and perilymphatic spaces of the labyrinth and the extralabyrinthine intracranial spaces. It is very probable that infection spreads by this route from the meninges to the labyrinth. The inflammatory process extends along the lymph channels of the vestibule and cochlear aqueducts, involving the structures within the bony labyrinth. The perilymph and endolymph undergoes a change in composition due to the presence of the specific germ, the blood vessels become dilated and true tissue-hypertrophy ensues. Thus extravasations of blood easily take place. The tissues become dense, bone thickening takes place, and often the semicircular canals or cochlea are partially, if not completely, obliterated. In some cases the tissues become necrotic. In rare instances the tympanic cavity has become involved by the purulent process of the internal ear breaking through the oval or round windows, thus establishing a purulent otitis media. In this disease a mild otitis media is common, but usually subsides. However, in some cases it goes on to suppuration, but this affection, though severe in some instances, cannot satisfactorily account for the profound and complete deafness in by far the greater number of cases, or for the fact that deafness is almost invariably bilateral. Vertigo and intense tinnitus are sometimes observed, which is easily explained from the condition of hyperemia in the labyrinth.

Action of Yeast on Animal Body.—The action of yeast upon the animal body is a matter of great importance, since several of the supposed cancer organisms belong to this group. F. HENKE and F. MIODOWSKI (*Virchow's Archiv*, Vol. 181, No. 1) have infected rabbits in various ways with the yeast described by Leopold. An acute reaction was never seen, and no tumors could be found at autopsy, even though a large series of animals was employed. The *Saccharomyces neoformans* of Sanfelice, on the other hand, proved to be very virulent to animals. Tumors were formed in time, but these consisted solely of proliferated yeast cells, together with granulation tissue. No real neoplasms, in any way suggesting carcinoma or sarcoma, were encountered, even though the animals were kept under observation for many months. It is therefore extremely improbable that yeasts stand in any etiological relation to malignant neoplasms.

Congenital Transmission of Tuberculosis.—A series of interesting experiments conducted by F. F. FRIEDMAN (*Virchow's Archiv*, Vol. 181, No. 1) proves beyond doubt that tubercle bacilli may be found in the embryo, if the genital organs of the male animal are diseased. Tubercle bacilli were injected into the vasa deferentia of male rabbits; seven days after intercourse the embryos were examined and in almost every case bacilli were present. If the injection was made directly into the testicles, the findings were the same; but frequently the disease spread so rapidly in the male animals that conception did not take place. After intrapulmonary infection a transmission of the disease did not occur; after intraperitoneal infection the animals generally died too rapidly, but when the bacilli were injected directly into the blood-stream of the male, or the vagina of the female, the embryos frequently were infected. It is an interesting fact that the embryos themselves do not become tuberculous, despite the positive findings; they are generally carried to term, and are perfectly healthy and well-developed. It is very likely that in man, infection also occurs through intercourse, particularly since the human tissues are more susceptible to tuberculosis than those of rabbits.

The Etiology of Cancer.—After five years' study of the parasitic origin of cancer M. SCHÜLLER, of Berlin (*St. Louis Med. Rev.*, September 16, 1905) states that the facts collected entitle him to regard the

former theories, particularly the anatomico-pathological theories, as fallacious and untenable in the majority of points, especially as the attacks of these pathologico-anatomical antagonists continue to take their point of departure from suppositions which have long ago been disposed of, by the author among others. These antagonists absolutely leave unexplained why the introduced epithelia should grow, and especially grow into cancerous nodules. The author has demonstrated that these epithelia, which are being introduced into the glands, are laden with parasites, and, moreover, that parasitic forms alone, much smaller than epithelia, can contrive to be largely introduced into the glands long before the presence of any epithelial cells is demonstrable therein. The supposed fact that epithelium can grow into cancer without the aid of parasites has never been proved, any more than pathological anatomy has succeeded in producing cancer artificially and histologically by non-parasitic or other experiments. For the purpose of proving the parasitic origin in experimental cancer inoculations, the author has, in all his experiments, completely destroyed the cells in the cultures. The only living and efficacious part were the parasites, and this was also proved by the examination of the preparations taken from various organs of animals. In these animals there were found in the lymphatic glands only epithelia laden with parasites (from the intestine). These parasites are to be found not only in the originally infected organ but also in various other organs, especially the liver and lung, from the largest spore cysts to the smallest forms of development that are demonstrable only in thousandfold microscopical enlargements. The effect of the parasites upon the tissues consists not only in simple inflammatory manifestations, but also, for instance, in a typical proliferation, epithelial "pearls" (concentric masses), partial foci of distinctly carcinomatous, karyokinetic proliferations, such as have never been artificially produced. The author has stated the parasite to be a cell parasite, in all the demonstrations, inasmuch as the smallest forms of the parasites produced by the author from cancer cultures positively penetrate into the cells, even into the nuclei, and here undergo their further phases of development. It was from the parasitic cultures from human cancer and the changes in the organs of animals produced by inoculation with parasites and demonstrable by corresponding staining, that the author was able to prove that the spores of the parasites, or rather their sprouts, are possessed of a characteristic chromatin design, showing, as they do, instead of a developed nucleus, two or three punctiform swellings (therefore chromatin bodies), similar to the Aleppo buttons (Delhi sores), and further that the precisely identical small parasitic elements, when properly stained, can be found in human cancer. The author remarks that the identical parasites are encountered in both carcinoma and sarcoma, also that in the origination of the various kinds of cancer it is not the parasite alone, but naturally, simultaneously, also the epithelia of the various cells and tissues generally that come in for consideration. The author states that he has already pointed out on previous occasions that, in carcinoma, not only epithelia, but also endothelia, connective tissue cells, and muscle cells, undergo proliferation, and are also capable of independent proliferation in the epithelia when changed through the influence of the parasites, as in the case of sarcoma. Another discovery, made years ago, is the occurrence of exceedingly small but intensely motile filiform corpuscles, in both carcinoma and sarcoma parasites—similar to the observations made in the various phases of syphilis. Small foci of these filiform bodies have been found also in metastatic conditions of animals which had been inoculated with both carcinomatous and sarcomatous cultures, and which present a particularly fine picture in the lung. The best method for preparing tissue for finding the parasites is to harden carefully with alcohol, imbed in celloidin, prevent injury by section, and examine the specimens in certain aqueous saline solutions, and stain with the simplest process. This method will reveal the parasites and distinguish them from the ordinary tissue elements.

Primary Tuberculosis of the Pharyngeal Tonsil.—For some time investigators have recognized the importance of tonsillar tissue as a channel of infection in tuberculosis. F. IVENS (*Lancet*, September 16, 1905) reports a case of primary tuberculosis of the pharyngeal tonsil associated with tuberculous cervical glands. The patient was a boy, three years of age. Family history, negative. A swelling in the neck had been noticed for some months. This increased in size, and a purulent discharge from the ear appeared. The child showed the characteristic adenoid facies. The tonsils were enlarged, and glands were felt on both sides of the neck. On the left side they had broken down. These were removed, and later the adenoids and tonsils. The pharyngeal tonsil presented no surface macroscopical lesion. Microscopic examination revealed typical tuberculous symptoms with early central caseation distributed throughout the tonsil. No bacilli, however, were found in the specimens.

Study of Leucopenia.—An abnormally low number of leucocytes has been observed by L. D'AMATO (*Zeitsch. f. klin. Med.*, Vol. 57, Nos. 3 and 4) in two cases of Banti's disease, two cases of chronic malaria and in one case of hepatosplenic syphilis. The proportion of leucocytes was normal in only one instance; in the others the multinuclear leucocytes were diminished more than the other forms. The author determined the action of various normal and pathological irritations upon the number of white cells in these cases; thus, there was a slight increase after digestion, a more marked increase after the use of vesicants. With suppuration the polynuclear cells became more numerous, but a real leucocytosis did not occur. Hemorrhage seemed to have a more pronounced effect, but even here relatively low figures were found (from 2,300 to 5,400). After faradization of the spleen, the lymphocytes abounded in the blood, probably because the resulting contraction of the splenic capsule forced many of these cells into the circulation. The blood drawn directly from the spleen was also rich in lymphocytes. It was also found that wherever the number of leucocytes was abnormally low, the blood-serum manifested a slight agglutinating action, but not a hemo- or a leucolytic action. It is probable that the leucopenia is not due to an unequal distribution of the white cells in the body or a leucotoxic action of the blood-serum, but to a peculiar condition of the leucopoietic organs, particularly the bone-marrow and the spleen. In many cases the former organ will show myeloid changes, yet it is not clear why this should be accompanied by leucopenia. That other factors enter into the problem of the causation of leucopenia is highly probable.

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SATURDAY, NOVEMBER 4, 1905.

THE VICIOUS INSANE AND THEIR TREATMENT.

FROM that memorable day on which Pinel struck the manacles from the wrists of the insane at the Bicêtre, the condition of this class of unfortunates has improved steadily.

The changes that have come about are subjects of congratulation to the medical profession; but they have come very slowly and there are still many evils, if not abuses, that are in much need of correction.

The unfettered hands made for increased liberty, it is true, but the value of the abolition of the chain was rendered nugatory by the locked and barred windows of the asylum. While in certain localities a progressive spirit was manifest, as in Belgium, the major portion of the insane population were shut up in their asylums.

The influence of the Gheel and other colonies brought into prominence the principle of the "open door," and it may now be claimed that the principle of non-restraint is the guiding one in our institutions at the present time.

However, the "open door" is open in a restricted sense only, for in the management of an asylum population, as classified in our present-day institutions, it has come about that in order to properly restrict a few intractable chronic cases, the liberties of the many comparatively even and undisturbed patients must be somewhat curtailed. This works an injustice to many, which even the farcical "daily walk" does not in any sense mitigate.

The need for, and the effort to give a more enlightened and humane freedom to these patients, who in reality require no restraint whatever, has led many alienists to advocate special means of dealing with the vicious insane, those who from one motive or another are the mischief breeders in the asylum population, and many others.

A recent and powerful suggestion along these lines comes from Serieux in the *Revue de Psychiatrie et de Psychologie Expérimentale* for July, 1905. In his review of this general subject Serieux advocates the establishment, not only of hospitals for insane criminals, *i.e.*, those becoming insane while serving sentence, but special hospitals for the dangerous class of insane to which should be transferred all those who have committed dangerous acts while insane, including those already committed to other hospitals, the insane criminals whose sentences have expired, the morally insane, born criminal, degenerates with dangerous tendencies and, in general, vicious insane of all classes.

This suggestion falls into line with the general trend of modern hospital management, of which we have spoken, which seeks constantly to better classify the hospital population. The separation of the insane criminals, criminal insane, epileptic and tuberculous classes has already been pretty well effected in this country. The author's plans, however, would take us a step farther and segregate all of the insane of whatever class who are dangerous in their tendencies, recognizing that whether they have come under the operation of the criminal law or not is largely a matter of accident, and that their treatment and the methods to be used in their care and custody, to be rational, should depend solely upon their mental condition.

In New York State, with its numerous hospitals for the insane, such a classification as this could be very readily carried out. It would not even be necessary to create a new institution for this class of insane, but in providing for the annual increase of six to seven hundred patients that the State has to accommodate, the necessary construction could be added in connection with one of the already established State hospitals. Although the author says nothing about

the character of buildings which would have to be erected, it is fair to assume, from experience with this class of insane, that the buildings would have to be constructed more nearly to approximate the style of a prison than those for general purposes, as this class of lunatics would require, to an extent at least, the constant observation and discipline of prison life.

In the tremendous reaction which took place from the old systems of restraint in the care of the insane, the modern hospital has come forth free from bars and with open doors and, in many instances, ill provided to care for the class of patients under consideration. It is, as a consequence, not an uncommon thing to see a viciously inclined lunatic, because of his dangerous tendencies, absolutely destroy the morale of an entire ward, perhaps an entire service, and by the constant care and attention which he requires, detract from the attention and care which should be directed to other patients. Such cases as this are usually of a chronic nature, and little or nothing is to be hoped for in the way of treatment. They should, therefore, properly be removed from the midst of others who are quiet and harmless, and whose condition is such as to make the results of treatment hopeful. The principal problem connected with their cases is how best to protect the community from their ravages, and although their custody in a special institution may not possibly be quite as comfortable for them, still it would seem that the best interests of all concerned would demand some such handling of this class of lunatics. If this method of procedure were followed the spectacle of an escaped lunatic terrorizing a community and placing life and property in jeopardy, moreover, would be less frequent.

GOOD MEN GONE WRONG.

Let the shoemaker stick to his last is too ancient a saying to even need quotation marks, but old as it is no one can question either its wisdom or its truth, and nowhere, perhaps, can any deviation from its advice be more productive of serious and yet ludicrous results than in the field of medical practice.

For in these busy days of specialism it is only natural that the demand for journals devoted to special subjects should be met by their publication. As soon as a new cult, or section of a profession, becomes of interest to a sufficient number of people, a trade journal devoted to that particular subject is established, and these increase and multiply on the general principle of the supply becoming equal to the demand. This is all as it should be. The publication is devoted to a special object; is read by people interested in that particular subject, and becomes an authority on it.

But having become established along these lines, it is a dangerous experiment to forsake them for strange gods and to go wandering into fields where their ignorance becomes painfully and humorously apparent. Thus, if a magazine had become known as an exponent of the ice trade in Maine, it would be apt to make some ridiculous errors if it started out to give advice to the sugar planters of Louisiana, while an educational journal that was supported and subscribed to by teachers and professors would hardly be considered an authority on the prize ring and general sporting intelligence.

A most striking example of this is to be found perhaps in the late issue of a journal that has become known far and near as being the court of appeal for the fair sex; an authority on her laces, her lingerie, her stocking supporters and everything that is hers. Added to this, it has a system of gathering its fair subscribers to its womanly bosom and, in a series of heart-to-heart talks, telling them in a negative way everything that they should not do. Now it has, it seems, taken a fresh departure and has added a department in which positive information as to what they should do, in a medical way, is dispensed in a most didactic manner.

For instance, they publish a letter from a fair correspondent, who writes that she has a "lady friend" who is so troubled with excessive perspiration that she becomes offensive and complains that "gentlemen" do not like to dance with her as she smells so "goaty." Now, who this "lady friend," that, like the battle, was smelt afar off, may be, we do not know, and, to tell the truth, are too polite to inquire. We were educated in our youth on the copy book heading that "horses sweat, men perspire, but that ladies glow," and we need no postgraduate course at the feet of even this terpsichorean Gamaliel. We are in doubt, however, as to what peculiar and pathognomonic odor can be ascribed to the goat. Musk has a distinctive and characteristic one, and the same may be said of the polecat, but we have always considered that of the goat to be of a composite nature

and to vary at different times and occasions; in fact, we remember an extremely strong and offensive simile that was used by a Western orator who declared that his political adversary was "as full of queer ideas as a goat was of strange smells." All this, however, is foreign to the argument, and smacks of the minstrel conundrum as to what smelt the most in an apothecary shop, which was promptly answered by "bones," who implicated the man behind the counter. But if the lady friend smelt goaty, it was perhaps superfluous to classify the odor.

Now, this journal *is* an authority on shirrings and ruchings. The good little dame in charge could tell at a glance if the corsage of opulent charms was in need of another "dart," and would be able to rectify the bad cut of the two-gored skirt that "hiked" in the front, but she is not a practising physician and it would be better for her to return the pins to her mouth and cling to her tape measure, than to trim her wings and fly to ills she knows not of.

Still another more glaring instance of the folly of departing from the beaten track is given by a well-known literary journal whose specialty is the providing of literary pabulum in a predigested form. In a recent issue it gravely and sedately publishes an editorial under the rather startling and surprising caption of "Can we breed a seedless man?" To this unique and rather misleading heading is appended a picture of Mr. Luther Burbank, with a note in small type explaining that he is the "wizard plant-breeder of America, who may yet add a seedless man to the list of his creations." The leader, after paying a deserved compliment for his success in stirpiculture to Mr. Burbank, plunges boldly and suddenly into the subject by asking "Why not eliminate some of the objectionable features from the human race in the same way?" If Burbank gives us a seedless apple, why may he not with equal success produce a seedless man; that is, one without a moral or physical fault? When this was suggested to Burbank he is reported to have answered, "that to do this very thing had been and still was the dream of his life."

Up to this point, as will be seen, there seemed little in the way of this proposed scheme, but now comes the first sign of doubt in the writer's mind of its immediate success, as he goes gravely on to ask "Is it possible to treat men like seedlings, to select the best and eliminate the rest, as Burbank burns his piles of unsatisfactory plants?" Evidently he has his doubts, as he quotes from a leaderette in the *San Francisco Call*, which, as he says, "points out some of the difficulties in the way." These same "difficulties" make rather a long list, but the writer keeps his best wine to the last in a way that is reminiscent of the classical reasons for not ringing the bells, and then sums up as follows: "In all these differentiations of animals and plants the subject was entirely under the control of man. Whole generations of plants were pulled up and killed and thrown aside, and one was preserved. In perfecting neat cattle whole generations went to the butcher except a favored few that were saved for the transmission of the desired traits. Whole litters of puppies were sent to the mill pond, except one or two that promised results.

Verily the human race could not be subjected to a course of sprouts and trimming such as this, and we fear that our literary friend must be content with the seedless man as he now exists. A seedless man, that, unlike the poet, is made and not born.

PROFESSOR VON NOORDEN ON MEDICAL EDUCATION.

THE St. Louis Fair will ever remain a memorable event in the annals of education by reason of the wonderful aggregation of the world's leaders of thought at the Congress of Arts and Sciences. This event alone has been a strong uplifting force in raising educational ideals throughout the United States.

The field of medicine has shared in this stimulus, particularly through the comment and criticism, always kindly, uniformly just and warranted, of many of the visiting members of the profession. Never before within the space of twelve months have so many distinguished foreign physicians visited the medical centers of the United States as during the year past. From time to time we have commented on the published statements that many have given to their countrymen and it is with a sense of growing pride that, as medical men, we have seen that our medical ideals have been observed and our lagging practices kindly discussed.

Our latest visitor, who even now is within our walls, Professor von Noorden, of Frankfort-a.-Main, has been interviewed by our daily press, and as his comments on things medical, though

drawn from a hasty glance at present conditions, contain truths which we recognize, we have thought to use them to re-echo the cry of our need for increased clinical facilities in our medical schools.

With many others who have come before he tells us and his confrères that the laboratory work and the teaching done in our medical schools is of the highest character. That it has deficiencies we are well aware, but it is pleasant to feel that an ideal, toward which the leaders in the profession have been striving, has been so nearly realized as to call forth praise from those who have been making at home a successful issue of similar aspirations. It gives us hope that the essential feature of a better medical education, the more intimate union of the hospital and the medical school, will come for all of our schools as the opportunity offers.

To review the economic phases of development of the medical schools in the different States of this country would take us far afield. Those who have watched their gradual evolution can understand that the conditions as found to-day are the inevitable results of the general social status of the new and rapidly developing republic. For ourselves, we congratulate those who have molded medical school development, that they have been able to accomplish so much—and so soon after the great historical crisis of the sixties.

No one can read of the struggles that most of our medical schools have passed through without feeling a throb of exultation that there have been so many medical men with faith in the future, and with courage to work during dark moments. That chapter in medical history has been written as yet in fragments only.

Dr. von Noorden pleads, as Dr. Osler has so often done, for the extension of bedside work as carried out in the foreign universities and in some of our own schools. We do not feel it to be a criticism of oversight or neglect, however, that it is not more universal. Our teaching systems and our hospital systems have evolved from different sources, along different lines, and it must take time either to combine them, or develop independent hospital schools.

It is said that we have too many small schools and universities, but this is an episode merely. Not many years ago all of the schools were small. We venture the prediction that the most rapid changes in the direction, now so much desired, will come about in these selfsame small colleges, for the ununited units of school and hospital are not so unwieldy or the foundations so fixed as they are in our Eastern centers, though, now that the tide is turning, we find Harvard, Columbia, Pennsylvania, and Chicago, earnestly working for these desirable ends.

Dr. von Noorden promises a more extended consideration, and we shall welcome his suggestions, for, judged by his singularly valuable lectures, we feel that he will approach the subject with due consideration of the complex factors involved, and indicate to us some practical methods whereby the coalition of interests can be effectively brought about.

ECHOES AND NEWS.

NEW YORK.

The Harvey Society.—The third lecture of the Harvey Society course will be given by Prof. F. G. Novy, of the University of Michigan, at the New York Academy of Medicine, on Saturday, November 4, at 8.30 P.M. Subject "Trypanosomes."

New York Skin and Cancer Hospital.—The Governors of the New York Skin and Cancer Hospital announce that Dr. L. Duncan Bulkley will give a seventh series of clinical lectures on diseases of the skin in the Out-Patient Hall of the Hospital on Wednesday afternoons, commencing November 1, 1905, at 4.15 o'clock. The course will be free to the medical profession.

New Hospital Dedicated.—The Philanthropic Hospital of Williamsbridge, recently chartered by the State Board of Charities, was dedicated October 30, 1905, in the presence of a large gathering of the medical profession and others interested. The old Jerome Hall, at Briggs Avenue and Maple Street, was leased and remodeled, and it was this building that was dedicated. It is a frame structure, and has accommodations for twenty patients, with a house staff of six physicians and six nurses. Corporation Counsel Delany, Magistrate Wahle, Prof. Charles Howard Bangs, of the College of Physicians and Surgeons, of Boston, Dr. George B. McAuliffe, visiting surgeon to the hospital, and Samuel Wallach, Chairman of the Trustees, spoke. Hitherto it has been necessary to take accident patients four miles to Fordham Hospital. The trustees wish to make known their desire for an ambulance.

For New Consumptive Hospital.—At its regular meeting last week the Board of Estimate appropriated $800,000 toward the construction of the tuberculosis hospital at Staten Island and bound itself to appropriate the balance of the $2,000,000 needed to carry out the plans in detail. Charities Commissioner Tully explained the needs of the institution. He is building in it units, and it will be several years before all the appropriation can be used. Gen. Wingate of the Board of Education reported that it had been found impossible to get athletic fields for all the boroughs for $300,000. He asked for $200,000 more, and the board voted it. Borough President Ahearn asked if Manhattan was to have a field. Mr. Wingate said it would cost too much. Then Mr. Ahearn insisted

that his plan, advanced last week, that the recreation piers in Manhattan be covered and be made winter gymnasiums be acted on. The requisite appropriation was promised as soon as the budget is disposed of.

Dr. Brush in Mount Vernon.—Single handed and with only his record to stand on, Dr. Edward F. Brush, the present Republican Mayor of Mount Vernon, is making a whirlwind campaign for re-election on an independent ticket. Judging from the present sentiment, Dr. Brush bids fair to smash both the Republican and Democratic machines and make good his pledge to the people of Mount Vernon to stop ring rule. Without even the support of a newspaper he has succeeded in stirring up great independent sentiment, and Republicans and Democrats alike are offering to bet thousands of dollars that he will win. With quotations of "Bust the Machines and Stop the Newspaper Graft," "Loyalty to Mount Vernon," "Vote for Brush and Home, Sweet Home" and "Let Independence Be Our Boast," Dr. Brush's name is a household watchword in the poorest and the most select sections of Mount Vernon. Mayor Brush is planning a monster mass meeting for next week at the City Opera House. He held one meeting at that place and although the night was a stormy one the place was filled from pit to dome. It is likely that either Charles Hill Willson, a millionaire Republican manufacturer, or Dr. Archibald M. Campbell, one of Mount Vernon's leading physicians and president of the Mount Vernon Trust Company, will preside. Dr. Brush threatens to take the "lid" off on both the Republican and Democratic jobbery. The fight has narrowed down between Mr. Archer and Dr. Brush, with the Democratic candidate running third. The Republican organization is working hard to stem the Brush tide. It is said they will have $30.000 for use on election day.

Journal of Biological Chemistry.—The first number of this new journal has just appeared, bearing the imprint of Drs. J. J. Abel, of Baltimore, and C. A. Herter, of New York, as co-editors. It is a very praiseworthy introduction to what we know will prove to be a highly useful journal. The opening paper is by J. J. Abel and R. de M. Taveau on the decomposition products of epinephin hydrate. This product it may be remembered was first found by Abel and subsequently isolated by Takamine and made commercially useful, as adrenalin. The present study is highly technical and is not completed. Dr. Reid Hunt contributes a paper on the influence of thyroid feeding upon poisoning by acetonitrile, CH_3CN. This product is toxic by reason of the hydrocyanic acid contained, which is slowly given off in the body. Ehrlich has shown that the poisoning can be neutralized by various sulphur compounds, and Hunt's study suggests the possibility that the administration of thyroid so alters the metabolism that more sulphur is made available. P. A. Levene writes on the Cleavage Products of Proteoses, and E. R. Posner and W. J. Gies contribute a study on Protagon, with the object of determining whether it is a mechanical mixture or a definite chemical compound. They conclude that protagon is a mixture of substances and not a definite chemical compound. The characters of the constituents have not yet been determined. Certain Aspects of Experimental Diabetes is the title of a paper by Frank P. Underhill. He studies the actions of piperidin, nicotine, etc., when painted on the pancreas whereby hyperglycemia is constantly produced. The reasons deduced are that the hyperglycemia is partly due to the general effect that these substances have in causing depression of the respiratory center with its attendant dyspnea. The dyspnea is always attended by glycosuria and hyperglycemia. Adrenal glycosuria cannot be explained in this manner. From a typographical and bookmaking point of view the journal is highly creditable.

New Otisville Sanitarium.—Sixty guests of Dr. Thomas Darlington, Health Commissioner of New York, visited last week the site on the Shawangunk range of hills in Orange county, which through the untiring effort of the Commissioner has been obtained for the establishment of a camp for consumptives, and where before two months elapse patients from this city will begin a hopeful fight for health and life. It has been only after unremitting efforts and almost insurmountable difficulties that Dr. Darlington succeeded in obtaining the site. Obstacles of all kinds have been in his path. Town after town refused to grant him permission, communities united against him, railroad companies opposed his plans, but inflexible determination finally triumphed and after the permission of the Board of Supervisors of the county had been granted he obtained the option on 1,200 acres of land in one of the most desirable places in the State. Of that tract of land 770 acres were deeded to the city some time ago, and the balance is to be bought in the near future. The party which visited the site was composed of members of the Board of Health's Advisory Committee, members of the National Society for the Study of Tuberculosis, members of the Society for the Study of the Condition of the Poor, several city officials and several newspaper men. A special train was provided and the party left the Twenty-third Street ferry of the Erie Railroad shortly after noon. After a fast run through a beautiful rolling country, Otisville, a few miles north of Middletown, N. Y., was reached at 2 P.M. Carriages conveyed the visitors to the summit of the hills on which the camp is to be situated, and which from an altitude of 1,400 feet will dominate two beautiful valleys, on the south side the one of Otisville, and on the north the one where the Neversink River runs. A more ideal spot for the purpose could hardly be found. The camp is to have a southeastern exposure. Summer quarters are to be erected on the summit of the hills and winter ones on the lower plateau, sheltered from the cold winds from the north and the west. The site is due west of Newburg. In a straight line it is twenty-eight miles from the Hudson, and by rail seventy-five miles from New York City. Springs of pure water are abundant, and the Neversink River runs near by. The property includes several farms. About twenty buildings are on it. "Now that we have found this site," said Dr. Darlington, "I am glad that we failed in other places, for we have obtained a better one in the end. Not only is this an ideal site, but I am convinced that in buying this land the city will get full value for its money. Although some of the farmers objected to our coming here and held their price high, we have succeeded in buying at usual prices. We began negotiations in the month of May, and the Board of Supervisors gave its consent comparatively easily. We have now bought about 700 acres, and expect to buy more as we go along. A special appropriation of $250,000 was made by the city in June for the camp, and of that sum $96,000 has been allowed for the purchase of the site. The land on which we have an option will cost ultimately about

$80,000, but I want all the land I can get. It will not all be a dead expense, as we expect to obtain returns from the cultivation of the land. Although the institution will be purely charitable, our patients will be expected to help in the working of the different farms." Dr. Hermann M. Biggs, General Medical Officer of the Board of Health, explained to the visitors some of the plans for the camp to which, with Dr. Darlington, he has given much time and thought. "This will not be like an ordinary sanatorium," he said, "as our patients are expected to wait on themselves as much as they can. From the beginning there is going to be a distinct understanding that those patients who are able to work, must do so or get out. The physicians in attendance will distribute the work according to the condition of the different individuals. Although in some cases exercise of any kind may harm a patient, in others, and especially in that of men who have been used to work, a little work is distinctly beneficial. Besides, only early or incipient cases will be taken here. Our patients will be taught a trade if they desire to learn one. There will be a schoolhouse for children, we shall endeavor to make the camp as self-supporting as possible. The land offers splendid opportunities for dairy production. We shall need enormous quantities of milk and eggs. We hope to get all this milk from our own place and have enough surplus to send to the hospitals in New York. It would be then a saving both ways as it would cost us about three cents a quart to produce milk here while now we have to pay six cents for certified milk in New York. Everything is going to be on the most economical scale possible. Food is to be of the best and nothing is to be neglected that will contribute to the improvement of the patients, but there will be no money spent on magnificent buildings and marble palaces. We shall build frame shacks. Each is to accommodate from ten to fifteen patients, we shall not take pay patients, but men and women will be used as employees. The first ones to come here probably will be selected from those that are being treated at the dispensary in New York, where we have almost 5,000 cases under our care and attend about seventy every day. We shall probably be able to accommodate 500 persons, but not many more for some time, I think. If the patients who come here do not improve after a certain length of time they will be sent back to the city or to some other place. The period of trial will be of about seven or eight months. We aim especially to help the small wage-earners, who can come here for a few months, learn how to take care of themselves, regain their health and then go back to the city." Dr. Abraham Jacobi made an examination of the water and said that he was very glad to find it pure and entirely satisfactory. He said that it came through an under stratum of granite and a soil in which there was no lime, and that it could not be polluted, springing as it did at such altitude. The party returned to New York on the special train, reaching here at 7 o'clock. Among the guests were Thomas McAvoy, Deputy Commissioner of Police; Dr. A. H. Doty, Port Physician; Dr. Francis Quinlan, Dr. Abraham Jacobi, Dr. George F. Shrady, Dr. William R. Townsend, Dr. A. Blauvelt, Dr. Paul Kennedy, secretary of the Committee for the Prevention of Tuberculosis; George Cooke, Samuel Parsons, Superintendent of Parks; William E. Studdiford, Livingston Farrand, William S. Gardner, William S. Cherry, Charles F. Roberts, C. Johnstone Imperatori, C. T. Graham Rogers, W. K. Simpson, H. Du Bois Goetchius, John B. Manning, Joseph H. Raymond, De Witt J. Seligman, James A. Uttiler, Arthur J. Weil, E. J. Richardson, Charles S. Benedict, Henry F. Koesler, L. Emmett Holt, Walter F. Chapell, Hermann M. Biggs, Joseph D. Bryant and S. A. Knopf.

PHILADELPHIA.

Recital for Hospital.—On November 21, a musical recital will be given at the Hotel Walton, the proceeds of which will go to the Oncological Hospital.

Filtered Water for West Philadelphia.—In order to supply all the people of West Philadelphia with filtered water, Director Acker has advertised for ten additional boilers to be placed in the Belmont Pumping Station. The Director expects that the additional boilers will be in working order by the first of the year.

Medical Club Gives Reception.—Professor Carl von Noorden, of Frankfort-a-M., Germany, who is now visiting this country, was given a reception by the Medical Club at the Hotel Walton. Dr. Howland G. Curtin, president of the Club, after giving a brief address introduced Dr. von Noorden, who made a short address, which was followed by a talk from Dr. Edward Brooks, Superintendent of the Public Schools. After these brief addresses the reception was formal; refreshments were served. Dr. von Noorden will attend several clinics and will visit the various hospitals in the city.

Towns Seek Aid to Combat Typhoid Fever.—Recently Dr. Dixon, Commissioner of Health, received a communication from the Board of Health at Berwick and Nescopeck asking his assistance in stamping out the epidemic of enteric fever which prevails at those places. Dr. Fred C. Johnson, chief medical officer of the department, was sent to Berwick at once, where he met F. Herbert Snow, chief of the Sanitary Engineer Bureau of the department, and Dr. George H. Fox of Hummelstown. These officers through Dr. Dixon's orders will cooperate with the local boards in suppressing the disease. Since both of these towns are below Nanticoke, where the disease has been epidemic, it is believed that owing to carelessness, waste matter has escaped from Nanticoke, which gave rise to the infection farther down the river.

Meeting of the Philadelphia Neurological Society.—The regular meeting of this Society was held October 24, 1905. The scientific program was opened by Dr. J. W. McConnell, who exhibited a patient with "Atrophy of the Lower Limb Following Specific Urethritis." Dr. W. W. McClure and Dr. T. H. Weisenberg showed a patient suffering with "Progressive Facial Hemiatrophy." Dr. Alfred Gordon presented a case of "Double Ego" and read a paper on the subject. Dr. Charles K. Mills spoke of "Crural Monoplegia, with comments on 'Progressive Ascending Hemiplegia,' probably due to Degeneration of the Pyramidal Tract." Dr. G. A. Moleen, of Denver, Col., and Dr. William G. Spiller reported a case of "Chronic Anterior Poliomyelitis" in an adult, with Necropsy. Dr. William Pickett made some remarks on "Testing the Iris Reaction to Light."

Meeting of the Philadelphia County Medical Society.—The regular meeting of this Society was held October 25, 1905. The scientific program was opened by Dr. John H. Gibbons, who read a paper on "The Operative Treatment of Fractures of the Patella";

he exhibited cases. Dr. Herman B. Allyn read a paper on "Two Cases of Severe General Infection of Obscure Origin." Dr. W. Wayne Babcock spoke of "A New Method of Surgical Anesthesia." In the course of one month thirty-two operations have been performed by the use of the "Scopolamine-Morphine" anesthesia at the Samaritan Hospital. Of the thirty-two, three were absolutely quiet under the operation; the remainder showed either slight or pronounced muscular twitching. Dr. Alfred C. Wood's paper was entitled "Notes on General Anesthesia with Special Reference to Scopolamine-Morphine Anesthesia." These papers were discussed by Dr. W. L. Rodman and by Dr. H. C. Wood, Jr.

Milk Accused of Infecting Pharmacy Students with Enteric Fever—A rather curious coincidence occurred recently when typhoid fever broke out in the dormitory of the Philadelphia College of Pharmacy. The first student attacked came from Nanticoke, a town near Wilkesbarre, where enteric fever has been epidemic and from which he might have brought infection, but since other students soon developed the disease also, that idea was abandoned. Not long after the second case developed four others made their appearance. The Board of Governors of the College then sought to determine the source of the infection. The Bureau of Health was notified and a search was begun, but nothing could be found that might account for the production of the malady. The milk supply was then examined, but up until the present time no bacteria have been found that might be responsible for the disease. The source of the milk supply was changed. There seems to be some doubt at the Pennsylvania Hospital, where three of the case were taken, as to whether or not the disease is typhoid fever.

Meeting of the Philadelphia Pathological Society.—This Society held its regular meeting October 26, 1905. The newly elected president, Dr. W. M. L. Coplin, was in the chair. The scientific program was opened by Dr. Samuel Leopold, who reported "A Case of Coccygeal Teratoma." The case was discussed by Dr. A. P. Francine, Dr. David Riesmann, Dr. Allen J. Smith and Dr. W. M. L. Coplin. Dr. C. Y. White spoke on "Pathogenic Molds (Aspergillosis)." Dr. McFarland presented three cultures of pathogenic molds recently brought from India. Dr. Howard Fussel read a paper on "Large Cystic Left Kidney and Five Calculi in the Opposite Organ." He showed the specimens. Dr. A. O. J. Kelly read a paper on "The Nature and the Lesions of Cirrhosis of the Liver, with Special Reference to the Regeneration and the Rearrangement of the Liver Parenchyma." He exhibited two gross specimens, one showing the hypertrophic and the other the atrophic form; both organs were larger than a normal liver. The paper was discussed by Dr. Steele, Dr. Riesmann and Dr. Coplin. The next paper was read by Dr. Randle C. Rosenberger on "The Spirochæta Found in Syphilis: A Study of Thirty Cases." This paper was discussed by Dr. J. J. Kinyoun, Dr. McFarland, Dr. Allen J. Smith and Dr. Coplin. Dr. Allen J. Smith exhibited a specimen showing a tubal pregnancy. Dr. C. Y. White presented a specimen showing melanotic sarcoma of a horse's tail, of the penis and of the iliac vein. Dr. John Funke exhibited a heart showing a pulmonary valve made up of two leaflets.

Hospital Reports.—The seventh annual report of the Free Hospital for Poor Consumptives shows that the total number of patients admitted between March 1, 1904, and February 28, 1905, was less than the total number of cases admitted the preceding year. During the time named 408 patients were admitted. Since the number of cases admitted was less and the expenses for the year ending at the time named was more, the cost per patient was decidedly increased. The total amount expended for the maintenance of the patients at the White Haven Sanatorium was $30,500.08; the Philadelphia executive office expenses amounted to $4,366.93. The total expenditure was $113,960.00. This included the building of a power house capable of supplying light for 300 patients. The total receipts were $117,386.69. During the coming year an attempt will be made to increase the capacity of the hospital so that 300 patients can be accommodated, instead of 120. It is the intention of the authorities to establish a chicken farm which will not only be a source of revenue but will also give employment to many of the inmates. According to the Director's report, the Department of Public Health and Charities will need $650,496 for maintenance during the coming year. That sum will be $287 less than the amount appropriated the last year. For executive expenses the Director asks $80,140, of which sum $24,300 is needed for salaries, $2,000 for the city's contribution to the Pennsylvania Training School at Elwyn, $20,000 to pay expenses of paupers' children in various homes, and $1,000 for a temporary home for homeless adults. The Health Bureau asks $285,200 for maintenance during the coming year. This amount is $5,000 less than the appropriation of last year. The maintenance of the Philadelphia Hospital amounts to $285,156; of the sum $125,000 is used to pay salaries, $50,000 for repairs, $21,000 for marketing, $15,000 for drugs and $7,500 for surgical instruments and hospital supplies. During the year just ended an operating room and sterilizing room have been constructed and equipped.

CHICAGO.

Appointment of Dr. Farrell.—Dr. P. J. H. Farrell has been appointed Surgeon-General of the Army of the Philippines.

Ravenswood Hospital Incorporated.—A hospital by this name has been incorporated with a capital stock of $50,000, for the purpose of maintaining a hospital and training school for nurses. The incorporators are Drs. Ernest A. Fetherston, Geo. W. Green and Geo. N. Bussey.

Favor Garbage Reduction.—Plans for disposing of the city's garbage were recently discussed by Commissioner Patterson, Richard Fox, Superintendent of Street Cleaning, and Aldermen Bennett and Raymer, of the Council Finance Committee. The two former have been investigating garbage plants in Eastern cities. Mr. Patterson returned to the city a firm believer that the process of garbage reduction is the best. Several bids have already been made for garbage reduction. Aldermen Bennett and Raymer are in favor of the contract plan as against the operation of a city plant. The matter will be taken up at a future meeting, and disposed of.

New Hospital Car Exhibited.—A new Southern Pacific Hospital car, which can easily be transformed into a parlor coach, was on exhibition recently at the La Salle Street Station in this city. When not in use as a hospital car all of the berths and beds and the operating table are lowered beneath the floors, where they are stored. The floor sections of the berth space come up and form the head and foot-boards for the

berths. The sections can be made up in single or double berths, and in place of the ordinary arrangement brass bedsteads may be substituted. Both lower and upper berths are provided with steel springs and the best mattresses. There is ample ventilation for both upper and lower berths, and either bed can be raised or lowered to any height desired. When the beds are in use the chairs and baggage are stored in the spaces beneath them. In sanitation the car is a distinct advance over the old style.

Infectious and Contagious Diseases.—Chief Medical Inspector Dr. Heman Spalding delivered by invitation a timely address on this subject on October 19 before a local medical society. Concerning pneumonia, which is again disputing with consumption for the captaincy of the men of death, Dr. Spalding cited statistics of the U. S. Census Bureau, and of the Chicago Registrar's Office, showing that one-tenth of all deaths in the United States is chargeable to pneumonia, and that in Chicago, from 1900 to 1905, more than one-eighth of all the victims of disease died from its effects, the death rate being greater by one-third than from consumption, and 85 per cent. more than that from all other acute contagious and infectious diseases combined, including diphtheria, measles, smallpox, typhoid fever, whooping-cough, influenza and scarlet fever. In Chicago during the five years there were 8,353 deaths from these diseases, compared with 15,327 from pneumonia.

Chicago Sewers a Menace to Public Health.—In the Bulletin of the Department of Health for May 13, 1905, it was stated that "the present condition of the city's sewers is an increasing menace to the public health of the city." Mr. Perry L. Hedrick, chief sanitary inspector, states that the conditions of sewage-flooded basements or of sewage-soaked soils beneath buildings are entirely too frequent to permit of the use of the sewers as ordinarily laid within buildings. Either the pipe must be placed in such a manner as to render it safe, in so far as the present prescribed water pressure test can be made to determine this, or a remedy must be sought in the use of extra heavy cast-iron pipes for house drains. The importance of a test upon house drains in Chicago cannot be overestimated. That this test should be sufficient to insure the employment of a high order of skill and the use of first-class material is absolutely necessary for health in the home. Insufficient size of many Chicago public sewers causes frequent flooding and back pressure in the house drains, which is virtually a water pressure test under varying heads of pressure, which produces fractures, discovers defects and develops leaks in the tile pipes, resulting in the presence of standing sewage in basements, cellars and surrounding soils. The gases arising from the leaks and breaks in drains have a positive effect upon all classes of persons breathing them by lowering vital resistance and thus increasing the susceptibility to disease. Sewer gas and soil air probably aggravate all diseases.

Chicago Physicians to Erect a Medical Building.—At a meeting of the Physicians' Club, held October 23, the subject for discussion was "The Establishment of a Permanent Medical Home and Library for the Physicians of Chicago and Cook County." Dr. Charles L. Dana, of New York, addressed the Club on the history of the organization of the New York Academy of Medicine, and offered suggestions concerning the establishment of a similar organization in Chicago. Dr. Nicholas Senn addressed the Club on the establishment and maintenance of a medical library in such a club, after which a general discussion followed. It is the purpose to make the building self-supporting from the rents received for private offices of physicians and surgeons, and at the same time to supply a place for the extensive and valuable library of the Chicago Medical Society, lecture and meeting rooms, club features, and rooms fitted up to take care of emergency cases and minor surgical work. A committee of the Chicago Medical Society now has the work in hand. Members of all organizations made up entirely of physicians and surgeons have given the project their hearty approval, and promise the funds to carry it out. Dr. Nicholas Senn offered to be one of twenty to subscribe $5,000 each for the project. Dr. Daniel R. Brower proposed that the number be increased to one hundred, supplying at once the means for beginning work. E. S. Andrews, representing the Trustees of the John Crerar Library, it is said, offered to take care of the medical library in the new structure that will be erected on the lake front, and also to supply meeting rooms for the medical organizations. The proposition was accepted by the Physicians' Club.

GENERAL.

Plague in Siberia.—Bubonic plague has again appeared on the line of the Trans-Siberian railroad, which from now on will be crowded with returning troops.

Appointment of Professor Johnston.—Dr. George Ben Johnston, of the Medical College of Virginia, has been elected professor of surgery at the University of Virginia to succeed Dr. A. H. Buckmaster, resigned.

Agnes Memorial Sanatorium.—Resignations.—Not approving of the present policy of the institution, the entire Medical Board, consisting of Drs. Arnold Stedman, W. H. Bergtold, Carroll E. Edson, J. A. Wilder and L. B. Lockard, has resigned from the Agnes Memorial (Phipps) Sanatorium, Denver, Col.

Appendicitis in Alaska.—Dr. A'Darcy Chace sends a note of the following case of recurrent appendicitis occurring in Nome. A. L., aged thirty-one years, operated on September 12 last, after having had three mild and one rather severe attack. The appendix was bound down in a mass of adhesions and was liberated after some trouble. Upon section after the operation we found in the appendix a small concretion from one side of which projected a short, stiff, black hair. Patient made prompt recovery.

Winding Up of Fever Regime.—The Marine Hospital authorities have just announced that no further yellow fever patients would be received in the emergency hospital. The services of eleven assistant surgeons, recruited from New Orleans physicians, were dispensed with. The rush of New Orleans people to their homes continues, partly induced by the fact that danger from fever is regarded as over and partly by the coming visit of President Roosevelt. Country towns which are lifting the quarantines are crowded with mechanics, laborers, and others interested in the sugar industry.

Japan's Medicine in the Navy.—Surgeon General S. Suzuki, of the Royal Navy of Japan, on the staff of Admiral Togo, on board the flagship Makasa, in the battle of the Sea of Japan, while visiting Cambridge recently, at the request of President Eliot, gave an address to the students of the Harvard Medical School and to as many of the profession as could attend. He described in detail the conditions for doing emergency surgery on board ship, and the disadvantages under which they had to labor. He told what sort of wounds were received and how they were dressed and in general as regards the medical department on board a Japanese warship. He spoke most interestingly and

his remarks were very enthusiastically received. He was introdueed by Dr. John C. Warren.

State of New Jersey Board of Medical Examiners.—At a conference held between the Board of Regents of New York and the State Board of Medical Examiners of New Jersey, at Trenton, N. J., October 16, last, it was decided to indorse each other's examined licentiates without further examination, beginning January 1, 1906. The medical license of New Jersey is indorsed, at this time, in lieu of further examination, by Maine, Vermont, Delaware, Virginia, South Carolina, Texas, Ohio, Illinois, Michigan, Minnesota, Wisconsin, Kansas and Colorado. New Jersey will indorse the medical license issued by any State, after examination, whose educational, examining and licensing requirements are substantially equal to, or higher than, those of New Jersey, irrespective of reciprocity, provided the applicant complies with the conditions of indorsement. The Standard of Requirements of New Jersey consists of a high school diploma issued after four years of study, and a medical diploma issued after four courses of lectures of at least seven months each, in four different calendar years, in a medical college of approved standing.

Traces Typhoid to Fruit Venders.—At the quarterly meeting of the Massachusetts Association of Boards of Health at the Hotel Brunswick last week the principal address was by Dr. George B. Magrath, acting secretary of the State Board of Health, who said that the recent outbreak of typhoid fever in Springfield, which he had investigated, was due, in his opinion, not to the water supply or the distribution of milk, but to the venders of bread, fruit and vegetables. Dr. H. C. Emerson, of Springfield, thought the epidemic was caused by the water. Professor Sedgwick, of Technology, agreed with Dr. Emerson, but considered Dr. Magrath's deductions were very good. Dr. Langdon Frothingham, of the Harvard Medical School, in a paper on "Rabies," referring to dogs, said: "There is no other animal with so many objectionable habits that is allowed such unbridled liberty." The other speaker was Mrs. Ellen H. Richards, an instructor in sanitary chemistry at the Massachusetts Institute of Technology, who read a report on the recent meeting of the American Public Health Association. Dr. Henry P. Walcott, president of the association, presided over the meeting.

The Pathology of Clothes.—A witty writer has contributed to *St. George's Hospital Gazette* a prospectus of a proposed work on the pathology and treatment of diseases and accidents of the toilet. The prospectus is fortified by alleged extracts from the forthcoming volume. Among the lesions described are "perforating ulcer of the sock," "false passages of the vest," "hairy mole of the shirt-cuff," "idiopathic atrophy of the pajamas," "sloughing of the posterior foramen of the collar-band," and "prolapsus trouseri," while a further chapter is said to be devoted to affections peculiar to evening dress, such as "Adison's disease of the shirt-front," "madura pump," and "inoperable volvulus of the necktie." The causation of false passage of the vest is described thus: "The head, being hurriedly thrust into the garment, lacerates the fabric, and emerges through the posterior wall of the axilla instead of through the cervical canal." "The best treatment is prolonged rest in bed." With regard to perforating ulcer of the sock, "treatment by simple suture or the purse-string ligature is not to be recommended. Each perforation must be carefully grafted by an expert."

The Boston Medical Library.—This Society is to give a series of lectures during the winter, as follows: October 28.—The Committee on Tuberculosis will make a report on progress through Dr. Henry Jackson. "The Treatment of Surgical Tuberculosis in Children," by Dr. E. H. Bradford; "The Duty of the City Toward Tuberculosis," by Prof. W. T. Councilman; "The Home Sanatorium Treatment of Tuberculosis," by Dr. Joseph H. Pratt. December 6—Surgical Meeting, subject announced later. December 20—"The Milk Supply of Large Cities." The program for this meeting has been arranged by Dr. Charles Harrington, chairman of Massachusetts State Board of Health, who has invited speakers from other cities. January 3—"Recent Advances in Physiology Bearing on Clinical Medicine," by Prof. W. T. Porter, Prof. Walter B. Cannon and Prof. Howell, of Johns Hopkins. January 24—"Surgery of the Peripheral Nerves," by Dr. John B. Murphy, of Chicago. February 14—"The Military Hygiene of the Japanese Army," by Capt. Charles Lynch, U. S. A. February 28—"Secret Nostrums," by Dr. Frank Billings, of Chicago. March 14—Surgical Meeting, subject to be selected by Dr. Joseph Blake, of New York. March 28—"The Treatment of Heart Disease": (a) "The Use of Depletion," by Dr. F. C. Shattuck; (b) "The Use and Abuse of Digitalis," by Dr. Franz Pfaff; (c) "Pneumatic Differentiations," by Dr. C. E. Quimby, of New York; (d) "The Nauheim Treatment," by Dr. F. B. Kinnicut, of New York. April 11—"Pyloroplasty and Gastro-enterostomy," by Dr. J. N. T. Finney, of Baltimore. April 28—Paper by Dr. G. G. Fernald, Waverly, of the Massachusetts School for Feeble-Minded.

The Stated Meeting of the Suffolk District Medical Society was held at the Medical Library October 28, 1905.—Dr. Abner Post, President of the Society, presided. Dr. Henry Jackson gave the report of the Committee on Tuberculosis and described in detail the results of the crusade against this disease during recent years in Boston. The report consisted of first, a description of the work and the agencies employed; second, a study of existing conditions here and in other places, and the distribution of the disease and the efforts at its prevention. There is only one disease with a greater mortality, *i.e.*, pneumonia. Boston holds the third highest death rate from consumption of any city in this country. There are at least 3,000 cases here, 1,400 being reported during the past year and 361 deaths from the disease without previous report. He spoke of the great lack of any provision for advanced cases. He described the powers of the Board of Health and what it actually does, mentioning the efforts against spitting; he recommended a more thorough medical inspection of schools. Next he spoke of the hospital provision for consumption. Not one of the four largest general hospitals will receive a case of phthisis in its wards. There remains a few small institutions such as Long Island Hospital, the Samaritan Hospital, the Channing Home, the Cullis Home, Free Home for Consumptives and others. He then described the work of the Society for the Relief and Control of Tuberculosis, the Parker Hill Day Sanatorium, the Emmanuel Church Tuberculosis Class and other private and voluntary labors. Last he recommended the more careful reporting of tuberculous cases, agitation by the profession for a large municipal hospital for consumptives, the isolation of cases, prohibiting of spitting and a more early diagnosis.

Dr. E. H. Bradford spoke on the treatment of surgical tuberculosis at Wellesley. There is too little atten-

tion paid to tuberculosis in children, especially as Pott's disease and hip disease are such frequent conditions. The Society for the Relief and Control of Tuberculosis makes no mention of this. The Samaritan Hospital in Boston was the first institution of its kind in the United States to attempt to treat tuberculosis in children. He described the gradual growth of the home at Wellesley, giving lantern slides showing the buildings, wards and management of cases. Since Dr. Bradford has been connected with this institution over 8,000 cases have been treated with a surprisingly large percentage of cures. He showed pictures of children sleeping out of doors in zero weather, and tables showing the remarkable gains in hemoglobin and weight.

Dr. W. T. Councilman spoke on the duty of the city toward tuberculosis. He emphasized the fact that tuberculosis or healed tuberculosis was found in 80 per cent. of all autopsies, and that, seeing how many people must have this disease and not know it, and that all these people must be sources of infection to others, it was remarkable that the disease could be controlled at all. Tubercle bacilli in the open air do not live long, however, and the dust of the streets as well as milk must be a very minor source of infection. He spoke of the duties of the Board of Health along lines of education, isolation and the building of a hospital on Long Island in Boston Harbor.

Dr. J. H. Pratt read a most interesting paper on the home sanatorium treatment of tuberculosis. He spoke of the formation of this class, along the lines of Dr. Minor, of Asheville, and the work done by himself and Dr. John B. Hawes in regulating to the minutest detail the lives of poor consumptives, unable to pay even the $4 a week required for Rutland, and gave the results. There were at present 9 members, one a case of pyopneumothorax, had neither gained nor lost weight; among the others the lowest gain was 8 pounds, two were 18 pounds, one 23 pounds and one 29¾ pounds since the middle of last July. He showed pictures of the patients living on the roofs of their tenements in tents in the heart of the city and contrasting views of the rooms from which they had been removed.

Dr. Townsend gave a report of the work done by the Parker Hill Day Sanatorium.

Dr. E. A. Otis showed some charts on the condition of the city as regards tuberculosis ten years ago and now.

Dr. C. J. Blake read a short memorial to the memory of Dr. Chadwick, recently deceased.

Dr. von Noorden Finds America Progressive.—Prof. Carl von Noorden, physician in chief to the City Hospital at Frankfort-a.-M., and the most noted authority on disorder of metabolism, returned to New York early this week after a two weeks' tour of the leading medical centers of the country. Before leaving New York on his trip, on which he was accompanied by Mrs. von Noorden, Dr. von Noorden had delivered six lectures on diabetes, its pathological chemistry and treatment, as a part of the course known as the Herter Lectures at Bellevue Hospital Medical College, already reported in the MEDICAL NEWS. Dr. von Noorden gave his impressions of the United States, its people, and its institutions to a newspaper correspondent as follows: "Of course," he said, "my chief interest naturally centers in matters relating to my own profession and the members of it I have met here, many of whom I had already known during their summer visits to the hospital at Frankfort. On my trip I examined the hospitals and colleges in Chicago, Washington, Baltimore and Philadelphia, delivered lectures in them, and assisted at clinics. I met with the warmest welcome everywhere, and both Mrs. von Noorden and myself are extremely grateful. But after all I must confess the greatness of the country impressed me more than I could ever have imagined it would. I found everything on a scale much grander than I had anticipated. I am so delighted to see the progress and the intense desire for progress on every hand. This intensity seems to be incorporated in every one here; not only have I observed it in the members of my own profession, but in all others. It has impressed me very much indeed. After lecturing before the Harvey Society on October 14, we went to Niagara and spent a day there. The grandeur of the spectacle amazed me, as it does every visitor. Then we went to Chicago, where I was very cordially received by the medical men. Both the Chicago Medical Association and the German Medical Society gave receptions for me. I delivered two lectures there, one on gout and the other on Bright's disease. I was sorry not to have seen more of Chicago, but my program was already too big for the limited time at my disposal. I visited the great Armour plant, and was especially interested in the chemical preparations. I mean the dietetic food preparations, which, in my opinion, are excellent. We visited Pittsburg next, and I spent two days with friends, taking a rest, which I assure you was much needed after four days in Chicago. Then we went to Washington, which I fully believe to be one of the most wonderful new cities of the world. Physicians from cities in Virginia and Baltimore visited me there. I was sorry I couldn't see more of the National Capital, but a Johns Hopkins man dragged me off to Baltimore to see the medical colleges. I do not regret it. I got a full impression of the excellent scientific work that is being done there. I observed the same thing in Philadelphia. Medical education is progressing here in an extremely rapid way. The combination of theoretical education, demonstrations and the practical work that makes up the medical student's course during the first two or three years, is admirable. It is much more extensive than we can give our young men in Europe. It augurs well for the future. I met with the same kind reception in Philadelphia and elsewhere. There was almost too much in the line of receptions and banquets; they nearly killed me. I visited the truly wonderful medical laboratory of the University of Pennsylvania. I never saw such an institution with such magnificent teaching facilities. The arrangements there indicate great progress; the methods are excellent. I assisted at some clinics and delivered some lectures, and then last week we came here. Naturally, when I compare these institutions with ours in Germany, I find some things to criticise. I have received the general impression that the theoretical education here is excellent, but the research work in the clinics and the bedside teaching is hampered. This is not the fault of the physicians, but because of the construction of the hospitals. It is difficult to combine hospital and laboratory work so that the one properly influences the other. Improvements are beginning, however, and new and great means of overcoming these difficulties can be brought into play. I have now been physician in chief to the City Hospital at Frankfort-a.-M. for more than eleven years. Postgraduate teaching only is given there. I have combined the laboratory and hospital work in a special manner, which I think greatly modifies the conditions I have spoken of as existing in Amer-

ican institutions. I have devoted years to the solution of the problem. I have a private clinic there, and every summer many Americans, both members of my profession and patients, visit the hospital. I believe that there are too many small colleges and universities in this country. I think if they were combined into a few, better and more concentrated work could be done. The visiting physicians to the hospitals are changed too often. It is bad for progress and research work. The hospitals themselves are new and excellent. I intend later, however, to write more fully my impressions in some medical journal. I shall remain here twelve days to rest and see New York, for I haven't had a chance to see your city yet. We will sail on November 7 on the Kaiser Wilhelm der Grosse."

OBITUARY.

DR. WILLIAM TITUS died last week of apoplexy in Newark, N. J. Dr. Titus was born in Hackettstown, N. J., sixty years ago, and received early training in Pennington Seminary. He was graduated from Jefferson Medical College in Philadelphia, and at the age of twenty-five went to Newark. He twice served the city as health officer, was for a time a United States examining surgeon, and for twenty-five years was a surgeon for the Lackawanna Railroad.

SPECIAL ARTICLE.

THE HERTER LECTURES ON DIABETES.[1][2]

BY PROF. CARL VON NOORDEN.

PHYSICIAN-IN-CHIEF TO THE CITY HOSPITAL, FRANKFORT-A.-MAIN, GERMANY.

(Continued from Page 856.)

FIFTH LECTURE—OCTOBER 13, 1905.

The greater the intensity of the diabetic disturbance, the more of the carbohydrate flows away. The patient suffers from insufficient nourishment: he gets thin. Theoretically, one may put an end to this and replace the loss of carbohydrate by adding more proteid and fat to the diet. As a matter of fact we strive to follow this course. But it is hard for people to consume a sufficient quantity of fat. Abundance of the latter produces a gastro-intestinal catarrh, and the more intense the diabetic process, the more apt is this to occur. The patient gets weaker and weaker, and it is to these digestive disturbances, due to the large amount of fat, that the patient owes this condition, in many cases, more than to the original disease. In some cases there is an abnormal amount of purin excreted, although the nitrogenous balance is maintained. This indicates a progressive atrophy of the nuclein substance of the cells, possibly due to some toxic influence. The dangers of acidosis only apply to the severer cases of diabetes, and it is probable that it is the quality rather than the quantity of acid bodies that is decisive in this direction. The diabetic has a diminished resistance to acute infectious invasions, particularly to the streptococcus, staphylococcus, pneumococcus, and the bacillus of influenza, and when attacked by one of these he is pulled down by it more than the normal individual; recovery and convalescence are delayed. The acute secondary complication is followed by an increased glycosuria, and cases of slight diabetes are transformed into severe ones. One often notes the onset of early senility in diabetics: there occur atrophy of the skin, loss of teeth, nervous manifestations, optic neuritis, neuralgia, etc. Injuries are more subject to septic infection, and healing is more difficult; the edges of the wound have a tendency to necrosis. The skin is one of the most sensitive parts in diabetes; it is subject to eczema, furuncles, carbuncles. Among chronic diseases, pulmonary tuberculosis is not so common a complication as at one time thought; when once combined with diabetes, it alters the prognosis, both in slight and severe cases. All the chronic degenerative processes are commonly seen in diabetics. Of these the principal one are diseases of the arteries. The arteriosclerotic process affects only the vessels of the lower extremity, like that form occurring in old age. In no other diseases is this localization of the disease of the arteries to the vessels of the lower extremities seen. As a consequence of the arteritis the patient is exceedingly liable to gangrene. What is the etiology of all these degenerations, Do they result from the hyperglycemia, or are they to be attributed to a toxine? It is a daily experience that ridding the patient of hyperglycemia or its associated glycosuria, or diminishing these, improves the symptoms of arteriosclerosis. Thus gangrene, neuritis, disturbances of vision and looseness of teeth get better; an increasing dimness of the crystalline lens may get better. It is rash to conclude that it is the sugar itself that is the cause of the degeneration. In overcoming the glycosuria we neutralize other toxic substances that are associated with it. If the early stages of diabetes are energetically treated, it is possible to ward off the serious later stages of the disease.

Treatment of Diabetes.—Years ago the only treatment of diabetes was symptomatic. To-day the dietetic treatment is the best. As regards prophylaxis, it is unfortunate that the large majority of the cases are well advanced before we are asked to treat them. But in special cases one may exercise an efficient prophylaxis. Thus, when several cases occur in the same family, one should be on guard against additional cases. Transitory glycosuria should be neither slighted nor neglected. It is a warning signal. The physician should make frequent examination of the urine, and the carbohydrates in the diet should be reduced to a minimum. This precaution is based on abundant experience. Plenty of carbohydrates reduces the toleration capacity of the patient. There is no true etiological treatment, for the true etiology is not known. There is no such disease as a neurogenous diabetes, but there is a neurogenous glycosuria which is transitory and plays a large part in the production of true diabetes. In many diabetics nervous influences lead to an increase of the diabetes. In severe cases the nervous influences are obscured, but in the mild cases the connection between the nervous system and the diabetes is clear. Mental excitement may cause the appearance of glycosuria in a diabetic, who, under an appropriate diet, is entirely free from it. This occurs most frequently in neuropathic or neurasthenic individuals. These are the cases formerly called neurogenous diabetes, but are really cases of true diabetes. Undue attention to the nervous factors may cause a dangerous neglect of the dietetic factors. The aim should be to prevent a slight diabetes from passing into the severe form. It is customary in many instances to give all foods to neurasthenic diabetics, on the plea that the limitation in diet disquiets them; this conception is false. Do not advo-

1 Abstract of Course of Lectures on Diabetes Mellitus.
2 Delivered before the University and Bellevue Hospital Medical College, New York.

cate a one-sided treatment of diabetes in these cases, for they may be benefited by an adequate recognition of the nervous factors. Frequently removal from the wear and tear of life is sufficient. In some cases, in spite of the treatment of the nervous system, the alimentary diabetes remains. Treatment of the nervous factors may require soothing remedies, as potassium iodide, codeine; sanatorium treatment may help. Syphilitic affections may produce glycosuria through the nervous system. There may be a syphilitic meningitis. The syphilitic lesions of the pancreas are frequent; they are chronic induration; parenchymatous pancreatitis seen frequently in children, with the history that the parents had syphilis at the time of conception. There are metasyphilitic diseases which affect the pancreas. Von Noorden agrees with Alfred Meyer, of New York, that corrosive sublimate may improve certain cases of diabetes; but there are only half a dozen cases in the literature of the cure of diabetes by means of antisyphilitic remedies. It is worth while to continue experiments along this line with this caution: diabetics are very sensitive to mercury. Organotherapy has been directed against the causes of glycosuria and hyperglycemia, with a view to promote glycolysis. The pancreas preparations deserve first mention. Ten different preparations have been tested in von Noorden's clinic; extracts were given by stomach and subcutaneously; it is now agreed that they all have no effect. They are, however, good for other things, as the digestion of fats, which is impaired in many cases. Cohnheim's mixed extracts of muscle and pancreas have been recommended by Croftan, of Chicago, but since Cohnheim's experiments have not been verified, these extracts are not recommended. Thyroid and suprarenal extracts have been used, but these may themselves produce glycosuria. Liver extracts were recommended in France years ago. These have been tried without effect. In spite of all the disappointing results, many possibilities lie in organotherapy. We ought to obtain from organs substances that increase the capacity of the body to metabolize sugar. The number of drugs that have been recommended in the treatment of diabetes is surprisingly large. Only the more important ones will be considered. Opium deserves first consideration. It is useful, but has been greatly misused. Patients have been turned into true opium-eaters without relief of the diabetes. While the patient is excreting large quantities of sugar, opium is not indicated. It is useful in cases in which the glycosuria has already been reduced, say, to 20 grams per day by appropriate diet. Having thus reduced the sugar to a minimum, energetic opium treatment will cause the entire disappearance of the sugar; .12 to .15 grams of codeine daily is necessary. Diabetics stand opium well. At first experiencing as the result of its use, fatigue, relaxation of muscles and loss of appetite, they soon become accustomed to the drug. This remedy is valuable in attaining the end sought. The modus operandi of opium in diabetes is unknown; possibly it cuts off the nervous influence. The second drug to deserve consideration is salicylic acid and its derivatives, as aspirin, which last is the best, injuring the alimentary canal the least. Salicylic acid is useful in those cases in which opium is not. The former is good in slight cases and during the time when carbohydrates are permitted. It improves the assimilation of the carbohydrates. Cases which can stand only 60 grams of carbohydrate without salicylic acid can take 100 grams of carbohydrate, if they also take 3 grams of salicylic acid a day. This drug has a more marked effect in reducing the quantity of sugar than an equal quantity of antipyrine. Salicylic acid is contraindicated if there is any renal complication, and both salicylic acid and antipyrine if there is gastro-intestinal irritability. It has been found that the dried fruits and the extracts of syzygyum jarubulanum counteract the effects of phloridzin diabetes. It is doubtful if true diabetes can be ameliorated by it. Both successes and failures have been reported from its use. A happy mean, however, may be followed. In some cases this drug has diminished by 20 grams the amount of sugar in the urine, but the good effects ceased after three or four weeks. It cannot be predicted in any given case that jambul will or will not have a beneficial effect. Experiment will alone determine this. Just like salicylic acid it may be used for three or four weeks at a time. It is not surprising that the credulity of diabetics has fostered the large number of quack remedies, which has been applied in the treatment of this disease. The treatment in health resorts has been unduly relied upon. The chief one of these is Carlsbad, with its alkaline sulphuric waters. The advantages claimed for the health resorts are mostly humbug. The alkalinity of the waters is not sufficient to have any effect upon that of the blood. The patient may get much more alkali at home than can be gotten at the spas. But acidosis is, in fact, not much lessened by large doses of alkali. The Carlsbad cure should be looked upon as a unity if its beneficial effects are to be explained. The Carlsbad water, if employed at home, is not as efficient. It is a fact that many diabetics return home from Carlsbad with their tolerance for carbohydrates improved. There are five factors that enter into this cure: (1) The patient is completely removed from the worries of daily life. (2) There is a long stay and plenty of outdoor exercise. Some diabetics cannot stand severe muscular work; but some patients are benefited by long walks, which diminish the glycosuria. (3) The diet in health resorts is carefully regulated, although the dietary is not very much restricted, for the combination of the alkaline waters and a very strict diet has a tendency to make the patient nervous and weak. (4) The physicians of the Spa are well experienced in the treatment of diabetes, which is of eminent importance in the whole cure. (5) The balneology and the internal use of the mineral waters favorably influence many complications, such as digestive disturbances, obesity, gout, etc. The two essentials in the therapy of diabetes are a general regulation of the mode of life and a regulation of the diet. These do not apply to the same extent in any other disease.

SIXTH LECTURE—OCTOBER 14, 1905.

The Dietetic Treatment of Diabetes.—The dietetic measures which have been adopted in diabetes are established on two kinds of experiences. (1) On the return to the usual diet the patient may excrete much less sugar than before. In one patient the result may be transient; in another, permanent. (2) If we do not try to combat the glycosuria, the patient's power of assimilating carbohydrates gets less and less. This decrease of the tolerating power sometimes occurs in spite of the best of treatment. There is no doubt about the fact which has been well established by experience, namely, all those measures that diminish the glycosuria diminish the liability to and the severity of the complications. In the dietetic

treatment other things besides the sugar content of the urine should be taken into account. They are the behavior of the aceton bodies, the condition of the stomach, the comfort of the patient, and the condition of the central nervous system. It is the patient who is to be treated and not the symptoms, nor is it from books that one can learn to steer aright. The goal should be the reduction of the glycosuria to the lowest possible limit. This must never be lost sight of. It is only in quite hopeless cases that this can be forgotten. It is necessary to determine in every case the exact amount of carbohydrate the patient can tolerate. For this purpose the test-diet of von Noorden has been almost universally adopted in Europe. The foods are divided into two groups: (1) The principal articles of diet; these are substances practically free from carbohydrate, and form the basis of the three meals. (2) The accessory articles of diet. In the test-diet the patient is given 100 grams of bread per day, 50 for breakfast and 50 for lunch. If no sugar is found in the urine the amount of bread is gradually increased until sugar appears. This represents the capacity of tolerance for carbohydrates. Or if sugar is first found in the urine with a diet of 100 grams of bread a day, this quantity is decreased gradually until the sugar disappears. When urine is free from sugar while the patient is on a bread diet, it is a case of slight diabetes. In some cases the urine is free from sugar as soon as the diet contains no carbohydrate. These are the moderately severe cases. In the severe cases the proteid in the diet must be reduced as well to cause a disappearance of the sugar in the urine. In the very severe or grave cases even the reduction in the proteids does not suffice to remove the sugar from the urine. There are other special matters which are of great importance in determining the tolerance of the patient. The influence of rest and muscular movement must be studied. Some patients can tolerate much more carbohydrate when taking exercise; others act otherwise. The influence of the time of day when the carbohydrate is taken is of importance. Some patients are extremely sensitive in the early morning, while they can tolerate much more carbohydrate in the middle of the day; with others it is the reverse. Sometimes the carbohydrates are better tolerated in small and frequent doses. Moreover, the toleration power for different kinds of carbohydrate should be studied. Some can stand sugar of milk better than others. Some patients can stand starch better than sugar. It is often found that the starch of oats is better borne than that of rye and wheat. The influence of medicines, alcoholic drinks and mineral waters should also be studied. Only in this way can a satisfactory basis for treatment be instituted. Schematic rules are good only for a very small number of patients. Having determined the tolerance of the patient and the various factors that influence it, then begin the actual treatment. The broader the experience of the physician in the treatment of diabetes the greater is the variety of his modes of treatment. The treatment for only certain groups of cases can here be outlined. In all slight cases the patient must first go through a period of restricted diet during which all carbohydrates are prohibited. This period succeeds in raising the tolerating power of the patient. After this the carbohydrate is added gradually. Care should be taken that the carbohydrates are kept well below the assimilating capacity, and that the urine is kept free from sugar. The patient is advised to abstain from time to time, for periods of one or two weeks, entirely from carbohydrates. A weighing machine is a valuable accessory. Loss of weight should not exceed one pound for a week. Much has been said and written against the strict diet cures. There is no need for prolonged periods of restricted diet in the slight cases; restricted diet for only 2 or 3 weeks at a time is all that is necessary. There are three points to be borne in mind. (1) Nervous people cannot stand restricted diet well. (2) It is commonly said that a restricted diet is not to be recommended when albumin is in the urine; with this von Noorden agrees only so far as not to allow a prolonged restricted diet when marked nephritis is present. It is indicated only for two or three weeks at a time. Care should be taken that the amount of proteids and extractives in the urine are not inordinately increased. For the first few days the albumin increases, then it steadily diminishes. Cases may be quoted in which not only the sugar, but also the albumen disappeared, which shows that the disturbance of the renal epithelium may be the result of the diabetic condition. It has been said that restriction of the carbohydrates leads to acetonuria. It is true that during the first few days a marked reaction occurs. This is also the case in the healthy individual. If the restricted diet be continued the aceton bodies gradually disappear after eight or ten days. It is necessary to make quantitative examinations of aceton; if this is within physiological limits no danger results. If in cases of slight diabetes the acetonuria exceeds these limits, then it may not be well to persist in the restricted diet. Much depends on the study of each separate case and its treatment or its own merits. In the slight cases one should endeavor to remove the glycosuria entirely. The physician should strive to raise the toleration limit. He should interest himself in the mode of preparation of the food. A temporary course of treatment is recommended in the clinic for a short time for its educational influence; the patient may here learn the best mode of preparing his food. He will also learn to appreciate the significance of his tolerating capacity. One cannot draw a sharp line between the slight cases and the moderately severe ones. In some cases 60 to 80 grams of bread can be well tolerated for days. If you cannot get the urine entirely free from sugar do not persist. In the severe cases 60 to 80 grams of carbohydrates cannot be tolerated and more than 12 to 14 grams of nitrogen appear in the urine. In these cases an 8 or 10-day period, in which the urine is free from sugar, is intercalated every 6 or 8 weeks. These periods are followed by improvement. The slighter forms of diabetes are the least dangerous of all the chronic diseases. In them there is much to be gained and much to be lost, depending on the institution and not of the proper dietetic treatment. In the management of the severe cases begin with a long period of restricted diet. Besides the cutting out of all carbohydrates, the meat is restricted to 200 grams, weighed when cooked. The vegetable proteids are tolerated better than those of meat. There should be periods of two or three days each, during which the proteids are reduced to the utmost minimum. These are the "green" or vegetable days. An abundance of alkali must always accompany this restricted diet, for the aceton bodies, which increase in amount, must be neutralized. Daily analyses of the aceton bodies should be made. This can be done well only in an institution. The danger

of the onset of coma from increase of the aceton bodies in the blood is small, if the practitioner remains master of the situation. It is astonishing how the muscular power increases. After the long initial period of restricted diet, 80 to 100 grams of bread are allowed daily. Proteids are permanently reduced, so that no more than 12 to 14 grams of nitrogen appear in the urine. There are intercalated periods of two or three days, during which no carbohydrates are allowed, and also one "green" day, both occurring twice a month. It is sometimes better to have these periods closer together. Once or twice in each year the patient should return to the restricted diet. The question often arises whether such patients should be given the Carlsbad cure. This, however, does not include the real restricted diet. There is one kind of treatment which is of great practical importance, although theoretically it is not explicable. The oat cure recommended by von Noorden several years ago was discovered accidentally. A number of diabetics in the hospital were given, on account of gastrointestinal irritability, nothing but oatmeal gruel. It was found that this caused a marked diminution of the glycosuria. The oat cure which this happy discovery gave rise to is as follows. The patient is given 200 to 250 grams of oatmeal daily, taken in the form of a gruel. The patient is also allowed 300 grams of butter and 100 grams of albumin from eggs and a little old wine or cognac. After three or four days there follow one or two vegetable days, which are repeated from time to time. In the beginning the glycosuria increases, but later it decreases. In some cases the urine may become entirely free from sugar. The following table illustrates the effect of the oatmeal cure on a case of severe diabetes. The Fe_2Cl_6 reaction refers to the presence of diacetic acid:

Day.	Diet	Sugar (grams.)	Aceton (grams.)	Fe_2Cl_6 (Reaction)	NH_3 (grams.)
1	Restricted diet	50.4	2.1	++	3.2
2	Restricted diet	48.3	2.4	++	3.8
3	Restricted diet	58.9	3.1	++	4.3
4	Vegetable, day	28.2	2.1	++	2.6
5	Vegetable, day	20.3	1.9	++	2.8
6	Oatmeal, 250.	38.3	1.9	+	2.4
7	Oatmeal, 250.	40.3	1.3	+	1.6
8	Oatmeal, 250.	30.	0.9	+	1.5
9	Oatmeal, 250.	20.1	0.6	+	1.1
10	Vegetable, day	8.	0.8	+	1.3
11	Vegetable, day	2.3	1.2	+	1.8
12	Oatmeal.	18.3	0.5	0	0.9
13	Oatmeal.	5.6	0.1	0	1.0
14	Oatmeal.	0.0	0.1	0	0.8
15	Vegetable, day	0.0	0.1	0	0.8
16	Vegetable. day	0.0	0.1	0	0.8
17	Restricted diet	0.0	0.5	0	0.7
18	Restricted diet	0.0	0.1	0	1.0
19	Restricted diet + 20 gr. oatmeal	0.0	0.18	0	0.9
20	Restricted diet + 20 gr. oatmeal.	0.0	0.13	0	2.8

In this case is to be clearly noted the fact that the sugar went down to zero during the oatmeal days, and continued so during the green days and the days of restricted diet, during which no oatmeal was administered. The cases in which the oat cure is effectual belong to the severe form, including the forms seen on children. There are some severe cases in which it has no effect. It is a failure in mild cases. Incipient coma has been fended off by its use. No other carbohydrate should be allowed with the oatmeal, nor is meat permitted. Success has been obtained by other physicians in the application of this cure, and some failures have been reported. Von Noorden has already tried it in 300 cases. In some cases edema develops during the oat cure, although diabetics do not ordinarily manifest edema. This ceases on stopping the oatmeal diet. This latter represents 150 to 160 grams of pure oat-starch a day. Von Duhring has described the same good results with pure rice flour. The potato cure of Musset excludes all other carbohydrates, and requires a diminution of the meat. Von Noorden has tried this method and found that potatoes can be tolerated better than one would suppose. Comparing the oat cure with the potato cure in the same patient, the superiority of the former has been proved. There are, however, some cases which respond better to the potato cure. Underlying all these cures is the principle of limiting the carbohydrates to one kind and excluding or diminishing greatly the amount of meat. The diabetic may retain the power of assimilating one kind of carbohydrate. An attempt has been made to explain this fact on the basis of the existence of specific diastases and anti-diastases in the blood. But this has not been discovered. It is important to possess means of mastering the aceton in the urine. It is a great advantage for periods of a week or 10 days to have the tissues entirely free from aceton. A number of important problems remains to be solved in the domain of diabetes. Many laboratory assistants are necessary to attack these. It is to America that Europe turns for an ample contribution to this subject.

SOCIETY PROCEEDINGS.

NEW YORK STATE MEDICAL ASSOCIATION.

Twenty-second Annual Meeting, held at the Academy of Medicine, New York City, October 16, 17, 18 and 19, 1905.

The President, J. Riddle Goffe, M.D., in the Chair.

THIRD DAY—OCTOBER 18TH (*Continued*).

(Continued from Page 861.)

Dr. Edgar said that in treatment as little chloroform as possible should be used, since its toxic action resembles too closely that of the toxins already in the circulation. Personally he uses morphine rarely; chloroform he uses occasionally at the beginning of the treatment, and then usually follows it up with veratrum viride and chloride. Drugs are not effective as a rule, and it is a question of prophylaxis that is most promising.

In closing the discussion, Dr. Cooke, of New York City, said that the most important matter is to train patients to consider pregnancy as a condition, the symptoms of which have to be watched very carefully. Headaches that persist must not be neglected, the urine must be examined frequently, and the patient's general condition kept under observation. This training of patients will prove very helpful.

Essential Similarity.—Dr. James Ewing, in replying, at the end of the discussion, said that the essential pathological condition which underlies eclampsia, pernicious vomiting and acute yellow atrophy, is a decreased oxidation in the system. No distinction in the pathological condition, produced by this process in the various ailments, has been made clear to pathologists, so that no pathological distinction can be drawn. There is a distinct predisposition to fatty

degeneration in pregnancy; hence the special danger of the use of chloroform, which has a tendency to heighten fatty degeneration.

Dr. Stone said that as yet not much is known about these three conditions to make a division possible.

Danger of Chloroform.—Dr. Cohen emphasized the fact that beside the danger of chloroform it is of no use, except for the moment. Its employment, indeed, was more due to the wish of the doctor to be doing something than to any special benefit that seemed to accrue from its employment. In autopsies upon fatal cases of eclampsia, not alone the liver, but the kidneys, the brain, the intestinal tract and all the more important organs should be carefully looked to.

Dr. David Austin, of New York, said that in forty years of practice he has seen six cases of eclampsia, all of which fortunately recovered. He considers that albuminuria is still of importance as an index, and that anesthesia with manual dilatation and rapid delivery is the best treatment in severe cases.

Eclampsia and Neurosis.—Dr. James J. Walsh, of New York, said that pregnancy is, after all, a physiological and not a pathological condition. Some of the recommendations that the urine must be examined oftener even than once a month would tend to make patients morbidly fearful as to the possibilities of their condition. Most women, especially in this generation, are quite timorous about the danger of child-bearing, and if this is added to and even exaggerated by constant dwelling upon the thought, serious neurotic conditions will develop even in sensible women. Not a few of the cases of eclampsia, so called, are really hysterical seizures brought on by this too great introspection and nervousness. Dr. Walsh has seen two cases in which fetuses were removed because of convulsive seizures, the origin of which, to his mind, was rather nervous than toxic. Almost needless to say, if a woman has once gone through an experience of this kind it is practically impossible for her to go through another pregnancy without nervous incidents of serious character. With regard to the removal of the fetus, it must not be forgotten that, according to the laws of the State of New York, the fetus is a human being whose life must not be sacrificed unless it is definitely decided that two lives are in imminent danger and only one can be saved. Even though impending loss of sight should be a feature of the case, the premature removal of the fetus is not justified by law unless the life of the mother is in danger. The moral law may have a still higher claim than this, but at least in the New York State Medical Association no opinion should be expressed in a matter involving murder that would contravene the State laws.

Resection of the Bladder.—Dr. Howard Kelly, of Baltimore, said that cystitis in women constituted one of the most intractable of diseases and sometimes proved obstinate to nearly all treatment. When a case of cystitis comes, first all ordinary remedies must be employed. Irrigation and systematic distention are the most important of early remedies. After this, topical applications should be made, for the condition of cystitis never involves the whole bladder, but only certain portions of it. If the affection does not yield, then the curette should be employed, except in the neighborhood ureters. Emmet's old-time method of draining through the vagina is an excellent one, and well deserves to keep its place as an effective method of treatment. Notwithstanding all of these methods, however, two to three per cent. of the cases of cystitis are not cured, or if cured, relapse. It is for these residual intractable cases that Dr. Kelly has resected the bladder in a number of instances removing the diseased portion and obtaining excellent results.

Dr. Vineburg, in discussing Dr. Kelly's paper, said that he has used some of Dr. Kelly's methods, and has found them of excellent service. Silver nitrate as a topical application has proven especially effective. When this does not do good, he is nearly always convinced that the case is really tuberculous cystitis, and that the kidney is nearly always involved at the same time.

FOURTH DAY.—THURSDAY, OCTOBER 19TH.

Spontaneous Cure in Cancer.—Dr. Harvey R. Gaylord, of Buffalo, N. Y., discussed the spontaneous cure sometimes seen in cancer and its significance in relation to the ultimate solution of the problem of the cure of cancer. In mice the observation of the spontaneous cure of cancer is easy to make and to substantiate. The mice, not being long-lived, represent a condensation of vital processes both in their tissues and the malignant neoplasm. Dr. Gaylord has in his observations found that if the malignant tumors of mice are disturbed by hemorrhages, then they are especially likely to regress. Cancer inoculations also lose their effectiveness if mixed with blood serum before being injected into the animals. In a word, the blood seems to contain elements that hamper the activity of cancer growth. Bashford, in England, has found that the injection of adrenalin by causing minute hemorrhages will have the same effect in inducing regression of the tumor as the passing of needles into it.

Explanation of Phenomena.—It seems evident that there is a certain immunity to cancer which, however, can be overcome. After the tumor has reached a certain size, injury to it and hemorrhage into it instead of causing regression causes it to grow larger more rapidly. There has been loss of immunity and the malignant elements assume full sway. At the beginning, anything that will embarrass the tumor helps the immunity to exert its effect. If an animal is heavily bled, however, it seems to lose its immune factors. Spontaneous cures in human beings seem to resemble those seen in animals. Coley's fluid, for instance, brings about a fatty degeneration of the malignant cells, embarrasses the tumor for a time, and then the natural immunity exerts itself. Spontaneous cure in human beings is rare, and yet, as in the corresponding cases of tuberculosis, it may be much more frequent than is to be thought. It seems evident that these new observations will open avenues to development of practical knowledge with regard to cancer.

Some Spontaneous Cures.—Dr. William B. Coley said that Frick had called attention to the fact that in the old days when cancers of the lip were removed without trying to reach all of the glands involved, complete cures were not unusual. It is evident that in many of these cases spontaneous regression of cancer elements that had found their way into neighboring glands was far more frequent than might be thought. It seems probable that the correct explanation of the X-ray's action upon cancer and also of the influence of the toxins upon malignant disease can be best expressed in term of the awakened immunity which comes in play when the tumor is influenced for the worse by these agents. Per-

sonally, Dr. Coley does not consider that the mixed toxins are of special service in the treatment of carcinoma, though some cases of true cancer have cured spontaneously after an attack of erysipelas. The toxins are useful in sarcoma, and evidently produce their result by embarrassing the growth of the tumor for a time.

Dr. Frederick, of Buffalo, reported a case of spontaneous cure of cancer in a woman of forty years, who has all the clinical signs, the fetor, the discharge, the tumor and the cachexia. In this case microscopic examination of a specimen, not deliberately taken, but which had clung to his glove, showed that the tumor was really cancerous. The case seemed hopeless, and yet the woman presented herself a year later with good cicatrices and in excellent health.

Dr. Dunning reported a case of spontaneous cure of cancer, in which all the clinical symptoms had been present, though no microscopic examination was made. Death seemed inevitable, yet the woman recovered completely.

Dr. Charles P. Noble, of Philadelphia, reported a case in which a large deciduoma malignum had developed so late in pregnancy as to be one of the latest on record. The tumor was very extensive; it was impossible to remove it all, especially from the anterior wall of the bladder, yet the woman not only got better, but continued in good health for four years. She then failed in health, and there was question of a recurrence of the tumor, but death took place from heart disease.

Serum for Cancer.—Dr. Harvey Gaylord, in closing the discussion, said that Rutter reported a case in which there was a cancer of the rectum removed, the diagnosis of malignancy being confirmed by Orth. There was a large cauliflower recurrence which seemed to be inoperable, yet it got better spontaneously. Later the man died from internal cancer, but as he had polyposis of the intestines, and these often degenerate malignantly, it is possible that what he had was not a recurrence, but another primary cancer. Dr. Gaylord has found that the serum of mice who recover from cancer possesses a special curative value when injected into other mice suffering from cancer. It seems not unlikely, therefore, that this method of producing a remedy for cancer will yet prove of service to human beings. Cancer malignancy depends to a great extent on the special tumor variety. There is no doubt that by passage through a susceptible animal cancer cells may be made more malignant than before. Early has succeeded in this way in producing a cancer which grows its own bulk in eight days, and produced sixty generations per year. Bashford, in England, has found a venereal tumor which is constantly communicated from one animal to another, and which has all the earmarks of malignancy, including spread by metastasis.

Therapy of Cancer.—Dr. Samuel Lloyd, of New York, discussed the present situation as to the treatment of cancer. Nearly 43 per cent. of those who have been treated surgically by the radical method for cancer of the breast during the last ten years at Johns Hopkins', have survived the three-year period. Dr. Rodman, of Philadelphia, collected the statistics of over 600 operations, 44 per cent. of which showed survival three years after the operation. A discussion of these cases shows that 27 per cent. of them were really inoperable when they came to operation because the affection had already become constitutional. The surgical statistics, then, of cancer of the breast are most encouraging. There are many who seem to think still that a woman is doomed who is suffering from cancer of the breast; but this is by no means the case, as these statistics show, and nearly one-half of them can have their life prolonged for at least three years, and some of them live on without recurrence.

Necessity of Early Diagnosis.—In the present state of the knowledge of cancer, it is a disgrace for a physician to allow a cancer case under his care to go on to the inoperable condition. It is nonsense to wait until the axillary glands are enlarged, since these only enlarge if the cancer is in the anterior portion of the breast. Cancer in the posterior portions spreads along the lymphatics to the muscles beneath the breast and to within the thorax. Until it is made clear to every practitioner's mind that cancer must not be neglected, and that early diagnosis means the salvation of most cases, any further improvement in cancer statistics cannot be expected.

Cancer Communicable.—Dr. Lloyd is of the opinion that cancer is a communicable disease. The reasons for this are, first, its great increase in modern times, the fact that cancer is most frequent where population is thickest, that, for instance, it is more common according to the numbers of the population in the poorer districts in Paris than in any other, that it seems to follow certain watercourses, that it becomes connected with houses, and that so many cases that are seen by surgeons can be readily traced to possibilities of communication. For instance, it is not unusual to find cancer occurring in those who are closely associated with one another. Dr. Lloyd has recently seen a cancer of the tongue in a workman who had been with another workman suffering from the same disease. He has seen it in two brothers who were living in intimate association. In a brother and sister, where one had nursed the other; in a wife and husband, who had been very much together. These are only a few of the cases of his recent experience, but serve to show the necessity for keeping this important matter of the communicability of cancer before the mind.

Cancer Parasites.—Of the possible presence of parasites in cancer, there is as yet no definite knowledge. Orth has declared that if there are parasites, they are very different to bacteria. Every cancer is epithelial in character, even though it may not be on the surface of the body. Just why epithelial cells overgrow, in order to produce malignancy, cannot be determined.

Prophylaxis.—All collections of epithelial cells, likely to be the subject of irritation, should be removed; hence, all ulcers and calculi in various portions of the body should be treated by radical methods. Ulcers of the stomach are almost surely more frequently the origin of cancer than has been thought, since the topography of the two diseases is the same. Gall-stones especially need to be treated, in order to prevent the possibility of cancer development. Dr. Lloyd does not believe in the X-rays as a prophylaxis of cancer, though they may be of some help after operation. For use before operations they are dangerous. The immediate effect is an obliterative endarteritis. The consequence of this may be, if an operation follows, extensive gangrenous tissues. Not a single permanent cure by the X-rays of a deep-seated cancer has been reported. Pastes are dangerous in the treatment of cancer,

and for superficial face cancers Dr. Lloyd has found butter of antimony better than paste, since it produces no pain and leaves a smooth scar. Even for superficial cancers, excision is best, as soon as the cancer is recognized.

Communication of Cancer.—Dr. Wm. B. Coley said, in the discussion, that he also believes in the conveyance of cancer. Recent cases which have occurred to him are cancer in two sisters, cancer of the rectum of a man and his mother, who had been very much associated, and others of the same nature. Hence he always insists on the care of nurses with dressings for cancer, just as if it were septic, and there is no doubt at all that the wound itself of an operation may become infected from another portion of cancerous tissue.

Failure of X-rays.—In forty cases of inoperable cancer of the breast, treated by R-rays, only one cure was effected, and even in this the other breast, after a time, developed the disease. Pea-sized nodules of cancer continue to increase in size, while the X-rays are being used. In sarcoma every reported case of cure has relapsed. In a recent foreign trip he found that this same conclusion was reached at Heidelberg and by Mikulicz at Breslau. At the Middlesex Hospital in England and the statistics of the Boston, Mass., General Hospital, show the same conclusion. At all of these places special attention has been given to the subject. No positive benefit seems to be produced by radium. With regard to the toxins, while effective with regard to sarcoma in certain cases, they have practically no place in the treatment of cancer. An occasional recovery from carcinoma after erysipelas takes place, but is rare. Dr. Coley has seen cases of sarcoma that seemed to have been inoperable, which have been treated by the toxins and are now well from three to twelve years.

(To be Continued.)

BOOK REVIEWS.

PSYCHIATRY: A Text Book for Students and Physicians. By STEWART PATON, M.D., Associate in Psychiatry Johns Hopkins University, Baltimore; Director of the Laboratory, the Sheppard and Enoch Pratt Hospital, Towson, Maryland. J. B. Lippincott Company, Philadelphia.

THE reviewer approaches the consideration of a new text-book on psychiatry with certain misgivings and in an attitude more critical than is the case with text-books dealing with other subjects. This is the result of a series of disappointments, the length of which depends upon the reviewers experience.

In the last two or three years there have appeared a round dozen or more text-books on insanity. The reason for most of these is hard to find. Whatever may be said about the progress of psychiatry and however willing we may be to admit that there has been a definite increase of our knowledge, it certainly cannot be said that the number of new works on insanity is any measure of the growth of the science. A psychiatrist writes his text-book for one or a combination of the following reasons. He conceives either, that there is a real need for a new work or that he has something new to say or can say something old in a better way, or that his peace of mind and comfort will be restored after he has put on paper some of the burden of uncertainty which torments him. It will generally be found that the reason an author writes a new text-book on insanity is that he rather than the public feels the need of it.

Paton's text-book differs from many others in the fact that he has given definite expression to certain faults in the organization of insane asylums and in the teaching of psychiatry in this country; and, furthermore, he has pointed out the correct method of changing them. The chapter on the modern hospital for the insane is an admirable exposition of the subject and deserves to be read widely. His insistance on the prime necessity of more accurate clinical observation and more definite notes in respect to the existence and development of fundamental mental anomalies can be regarded as a distinct service to the progress of psychiatry. What it needs, above all things, at present, he says, is a rigid study of cases, but without attempts to form any broad generalization. This expresses his attitude, one which is absolutely impregnable. This is an advanced position, and for that reason it seems a bit strange that Paton should still insist in presenting to his readers a long introduction, filled with abstruse, abstract discussions and quotations from the literature of psychology, mingled with his own opinions. The knowledge shown by the author and his acquaintance with the literature deserves praise, but the wisdom of devoting so much effort and space to this part of the subject is open to serious question. It is to be hoped that some time in the near future there will appear a text-book on psychiatry with the long introductory chapters left to special works, so that the reader can begin as soon as possible to become interested in the proper subject of a treatise on insanity, which is the discussion of cases of insanity. It is particularly to be regretted that the author's statement of the small importance of the usual psychological data should be controverted by pages and pages devoted to the exposition of them. In this respect Paton is following the tradition as old as psychiatry itself.

The chapter on manic-depressive psychosis is well worth especial mention. The author takes an advanced position and illustrates it well by admirable descriptions of cases. The reader longs for more of this kind of clinical exposition. The chapter devoted to dementia præcox will be read with considerable eagerness, for at present the way a writer places this subject before his readers might be taken as a measure of his special ability. Paton represents the prevailing and the best American opinion which considers dementia præcox a rather loosely formed group of adolescent insanities. A clear exposition of Kräpelin's position is given, which of itself will be of great value to those whom the many publications on this subject in the past few years have placed in an uncertain position in regard to just what Kräpelin means. Paton's treatment of the paranoia group deserves more than a word of praise. That paranoia is a rare condition and that paranoia-like symptoms are found in a great number of psychoses are two views which will meet with immediate approval. The excellences of the chapters here mentioned are repeated in many of the others also. Paton's fair and advanced position on many mooted questions is to be commended as well as his clear and explicit method of exposition.

The faults of Paton's book are probably the faults that are inherent in the subject itself. The chief criticism which might be directed against his book is the seeming importance given to what might be broadly termed the psychology of mental diseases as shown by the amount of space given to it and the seeming neglect in the use of the dialectic data thus derived in the main body of the work. In this respect Paton's book

has not made for itself the unique position which in many respects it is entitled to.

Its merit lies in the clear and pleasing style, the sound position taken by the author on many disputed points, the insistance on the importance of the clinical aspect of the subject and the scholarly atmosphere which makes the reading of the book a distinct and an unusual pleasure to those who are deeply interested in psychiatry.

Progressive Medicine. Edited by Hobart A. Hare, M.D., and H. R. M. Landis, M.D. Vol. II, 1905. Lea Brothers & Company, Philadelphia and New York.

As in former years, the second number of the year deals with the advances made in the subjects of Hernia, Surgery of Abdomen, Gynecology, Diseases of the Blood, Diathetic and Metabolic Diseases; Diseases of the Spleen, Thyroid Gland and Lymphatic System; Ophthalmology. A feature in the present number is the increase in the number of contributors.

We can add little to our previous estimates of this quarterly. It is a conscientious and scholarly performance, and the purchaser may feel that nothing important in the field has been omitted.

Now that Progressive Medicine has achieved so great a popularity and widespread a use, the reviewer feels that it might add to this well-deserved reception small monographic reviews of smaller topics. The inevitable failing that all works of this class have shown and which in time have led to their decline, has been the monotony of the treatment of the topics. The record of the year's work has been faithfully set down, but beyond this the reader has nothing. Authoritative reviews, running over a series of years, showing the march of progress, might make permanent features of merit, and thus make the volumes more constructively useful.

Notwithstanding the six years of this review's career we have not yet seen any adequate presentation of mental diseases. Such neglect can be explained only on the assumption that the editors seem to be ignorant of the existence of these disorders. We find in the six years over a hundred pages devoted to some minute blood or other disorder that has been observed perhaps a dozen times in ten years, but of affections that are more common and more disastrous than most of the widely written about affections hardly a line. The more strictly nervous disorders are well reviewed by Dr. Spiller, but mental diseases have been entirely neglected. This constitutes a grave defect of this otherwise splendid retrospect.

On Becoming Blind. Advice for the Use of Persons Losing their Sight. By Dr. Emile Javal, Honorary Director of the Ophthalmic Laboratory of the Ecole des Hautes Etudes, Member of the Academy of Medicine. Translated by Carroll E. Edson, A.M., M.D., The Macmillan Company, New York; Macmillan & Co., Ltd., London.

Dr. Javal has written a book which will be interesting to many people. Physicians whose duty it is to encourage and counsel the unfortunate blind when the time for professional service is past, should read with attention the introductory words warning them in hopeless cases, not to conceal from their patients the inevitable end by temporizing treatment and false hopes.

To the blind themselves, and especially those who look forward to the approaching darkness with the splendid fortitude and philosophy of the author the book will be a mine of information, containing most ingenious suggestions of methods of work, and details of the most varied kind regarding the conduct of life, the cultivation of independence, and the social relations.

It is perhaps the general reader who may be brought in contact with blind people who should profit most by this little book. It is the fartherest from the intention of the author to lay stress on the pathetic helplessness of his fellow sufferers, but here and there are instances which show how the blind are at the mercy of tactless and unsympathetic companions, and the devices adopted to escape humiliation are very touching.

It is impossible to cite passages—the entire book must be read and remembered, for all of us may be so placed that the happiness of the blind or deaf or helpless in other ways may depend on our unconsidered words or acts.

The admirable style, the fertility of resource, the human interest of this book insure for it a wide success, and contradict the author's misgivings; indeed we venture the opinion that it will live longer, and be more widely known, and a greater boon to the world than any of the more distinguished productions of Dr. Javal's pen. It is remarkable that there are already two English translations. The one under consideration is excellent, although exception may be taken to the use of the vernacular in a few instances, and possibly to the translation of the title—Entre Aveugles.

The publisher's work leaves nothing to be desired.

An appendix has been added giving information regarding books and library facilities for American readers.

Diseases of the Eye and Ear. A Manual for Students and Practitioners. By Arthur N. Alling, M.D., Clinical Professor of Ophthalmology in the Yale University, Department of Medicine, and Ovidus Arthur Griffin, B.S., M.D., late Demonstrator of Ophthalmology and Otology University of Michigan, and Oculist and Aurist University Hospital, Ann Arbor, Michigan. The Medical Epitome Series. Lea Brothers & Company, New York and Philadelphia.

This is an excellent little book, one of the best of its kind. It is of necessity extremely brief, but clear, and calculated to give the student or general practitioner much valuable information regarding the nature of diseases of the eye and ear, and the essential but simple methods of treatment.

The Eye, Mind Energy and Matter. By Chalmers Prentice, M.D., Chicago. Published by the Author.

The author indulges in generalizations for which there is often a basis of fact, but in the present day of precision such loose theorizing is out of place.

The book represents the extreme of faddism, about which enough has been written in these columns to show the danger to unscientific minds.

BOOKS RECEIVED.

Eighteenth Annual Report of the State Board of Health of the State of Ohio. 8vo, 569 pages. 1903. Illustrated.

Modern Dietetics in the Causation of Disease. By Dr. J. Sim Wallace. 8vo, 87 pages. Bailliere, Tindall & Cox, London.

Glanders; Its Diagnosis and Prevention. By Dr. Wm. B. Wherry. 8vo, 25 pages. Illustrated. Bureau of Public Printing, Manila.

Fractures and Dislocations. By Dr. L. A. Stimson. Fourth edition. 8vo, 844 pages. Illustrated. Lea Brothers and Co., Philadelphia and New York.